

The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

Vol. XXVII.

October 1st, 1932

No. 692

Notes and Comments

A Task Well Done

THE Council of the Institute of Chemistry has expressed its high appreciation of the valuable services of the Joint Chemical Committee, convened by the Association of British Chemical Manufacturers, to consider the amendment of the Patent and Designs Bill which, on passing into law, will come into operation on November 1. An account of the proceedings which have resulted in the amendment of the Bill to the material advantage of inventors, including chemists, is included in the current issue of the Journal and proceedings of the Institute. It is unfortunate that the Sargent Committee, which was made aware of the need for economy when evidence was given before it, should have recommended two alterations—a new Appeal Tribunal and the amendment of Section 21—which in effect would increase the cost in connection with patent applications and patents generally. The Joint Chemical Patents Committee was able to introduce amendments to limit the costs to be awarded by the Appeal Tribunal, but was not successful in securing amendment of Section 21. It is hoped, however, that should the new Appeal Tribunal be satisfactory, a new Act will be passed in order to foster economy which is of paramount importance at the present time to the nation as a whole.

The Council of the Institute and the Joint Chemical Committee have conveyed their thanks to Dr. G. C. Clayton, president of the Institute, for having put forward, and supported so successfully, the amendments recommended by the Joint Chemical Committee during the passage of the Bill through Parliament, and to Mr. H. Douglas Elkington, the representative of the Institute on the Committee, for his valuable help and advice in dealing with the matter. Particular mention should be made of the service rendered by Dr. F. H. Carr, Mr. J. Davidson Pratt and Mr. Hollins, who dealt with the amendments in a deputation to the Board of Trade, while Dr. Clayton has specially acknowledged the assistance which he received from Mr. Hollins when the matter was before the House of Commons.

The Industrial Horizon

THE end of British Summer Time and the annual period of relaxation coincides with more than one favourable symptom of the revival of trade. Several ominous clouds that have been gathering on the industrial horizon have been completely dispersed, and commonsense has asserted itself in the cotton industry, in the milk trade, and on a smaller front in the London omnibus organisation. A week or so ago the prospect for October was grim enough. On top of the other troubles which have been the lot of the business com-

munity for the last twelve months, there was the possibility of a national milk war, of a serious derangement of the London traffic service, and of the continuance of the cotton dispute keeping idle the great majority of the operatives of Lancashire. These dangers have all been removed by negotiations in which settlements have been hammered out giving victory to neither side but an equitable compromise between opposing demands.

British industry has a cleaner sheet to write upon than might have been expected. In the last twelve months it has gone through a more savage experience than has ever before befallen it. There could be no better tribute to its essential soundness than the manner in which it has weathered the storm. The general position has been vastly improved by the balancing of the Budget and the most successful conversion operation in all financial history. Industry now may legitimately expect to be recouped for its sacrifices, and the return of confidence is the indispensable means to this end. There can be no doubt that confidence has been steadily reviving since the beginning of the year. Still, it has been a slow growth and it has not yet gone far enough to justify some current predictions of an early return to the old prosperity. The business man who holds that a real revival of trade cannot be postponed indefinitely, and is prepared to back his opinion by his own enterprise, has a more favourable opportunity than any which has offered since the middle of 1929, when the present depression first made its appearance.

Taxation Must be Reduced

ONE of the most depressing aspects of the depression has been the widespread refusal of industrialists to take the smallest risk to secure new business. It is perhaps not surprising that there has been an absence of what is colloquially called "kick" in the hunt for new business by manufacturers and retailers alike. The dice, in their view, has been so heavily loaded against them as to encourage the almost universal adoption of the principle of "safety first." Business may be maintained by this principle, but it assuredly cannot be increased by it. It was anathema to the men who brought great industrial prosperity to Great Britain, but they had the indispensable advantage of confidence. They had the assurance that enterprise would bring its due reward, and with the rebuilding of confidence in the coming months the present generation will be given its chance to develop the skill and initiative which have too long been throttled by measures beyond its control.

This is where the Government has its part to play. No one who looks back to the appalling state of affairs which was suddenly disclosed twelve months ago can

doubt that the Government has done well up to this point. The men who deny its competence are those who accept the theory that better trade can be handed out to all and sundry by legislative enactment. All experience since the war points in the opposite direction, and the best hope of the business community is seen to be the loosening of Government control and the establishment of the individual manufacturer and trader in a position of greater responsibility. The loosening of fetters cannot be entirely successful unless it is accompanied by the lightening burdens. Every student of the statistics of international trade is impressed by the absurdly high scale of direct taxation which now falls upon every product of British hands. Industry can never be healthy as long as it is taxed far beyond the range of competitive commodities, and taxation can only be substantially reduced by the exercise of a policy of wise but rigid economy throughout the public services. There are signs that the rank and file of the House of Commons intend, when Parliament reassembles, to press the need for large measures of retrenchment upon the Chancellor of the Exchequer and the Ministry generally. The winter accordingly will test the Government to the full, and if the Government lives up to the expectations of the business world, the stage will be set with complete adequacy for the coming of those better times which are so urgently desired.

The Chemist's Bible

REMARKABLE secrecy is being preserved with regard to the contents of the new edition of the British Pharmacopeia, which is to be published on September 30, and which, on account of its vital importance to the profession, is commonly known as "the chemist's bible." It is true, as the Registrar of the General Medical Council pointed out in a letter to *THE CHEMICAL AGE*, in reply to a criticism in July, that a small number of copies have been available for inspection by interested parties for some time, but the general body of pharmaceutical chemists and manufacturers are still unacquainted with its contents. The new edition, which has taken ten years to prepare, will be published officially by the General Medical Council, and, as all the 23,000 pharmaceutical chemists in Great Britain must have a copy while doctors, hospitals, libraries and laboratories will also need it, the new edition is assured of some 50,000 readers.

References were made to the new edition of the Pharmacopeia at the British Pharmaceutical Conference at Aberdeen last week, but Dr. C. H. Hampshire, secretary of the Pharmacopeia Commission, frequently had to confess that he could not answer questions which were addressed to him. A number of new methods and formulae were discussed for the 1940 issue.

Research for Industry

TO what end should we prosecute research—for the advancement of science, or to enhance dividends to shareholders? The question is a pertinent one in relation to university laboratories and public institutions, and strong opinions are known to be held in some quarters in regard to it. At one of our northern universities valuable work is being carried out for the benefit of the gas industry in association with research committees set up by the Institution of Gas Engineers. There is criticism abroad that such research has been

too academic, and that it has no immediate practical value. It is urged that the gas industry should devote its research energies to the practical means of utilising larger quantities of gas, and postpone investigations which, though they provide results which are gratifying to the scientific mind, are of no practical value to the man who is making or selling gas.

Whilst the nature of the research carried on at its expense is entirely a question for the gas industry, it becomes of public interest when it is done in the laboratories of a university, and it is at least doubtful whether it would be proper to investigate in them such commercial problems as the critics demand. The primary objects of a university are to teach and to advance knowledge, and not to carry on with the aid of the students what may be termed commercial exercises. An example of the consequences of extreme specialisation on commercial work was seen a few years ago at one of the leading technological institutions across the Atlantic, when it was not unknown for professor, staff, students, apparatus, laboratory personnel and cat to vanish into industry with the perfected process, leaving only an empty building behind.

An Ideal and its Realisation

INTEREST, therefore, attaches to an experiment which is being made on the other side of the Atlantic by an organisation termed the Research Corporation, with which possibly some of our readers are already acquainted. It unites an ideal with a method for its realisation, in that it aims to conduct commercial operations for profit so that scientific research for its own sake may be carried on with the proceeds. It is based originally on the gift it received from Dr. Cottrell, of certain territorial rights to his electrical precipitator patents. Its commercial business is that of overcoming nuisances which arise from the discharge of gases into the air. The story of the Cottrell process is a fascinating chapter in our chemical industrial history, but it has oft been told and our interest lies particularly in the principle which the Research Corporation represents. What should be done when an institution financed by means of public or national funds makes and protects by patent a discovery of possible industrial importance? It cannot obviously work the discovery, or even establish successfully the commercial value, as this is a matter for the expert. Equally, it would appear reprehensible to give a monopoly, or even advance information of such invention, to any individual manufacturer. Moreover, it is the duty of the specially selected expert staff of a public institution to make and not to exploit inventions. It is equally improper in the opinion of most of us for such staff to act as consulting engineers in the development of the invention.

The suggestion of an organisation on the lines of the Research Corporation seems at least to merit attention. It will be remembered that a somewhat similar question has occupied the attention of the medical profession in connection with the granting of patents for the synthetic preparation of new substances for use in therapeutics. A representative conference of medical men held last May was in favour of establishing a mechanism by which such patents could be dedicated for the use of the public in this country, while affording the requisite priority of action in other countries.

The Association of British Chemical Manufacturers

A Record of Activities, 1931-32

THE activities of the Association of British Chemical Manufacturers experienced are reviewed in the annual report for the year ended Association next Thursday, October 6. The report records with regret the death of four of the Association's most distinguished members—Lord Trent, the Right Hon. J. W. Wilson, Sir Richard Threlfall and Sir William Pearce.

THE report states that the economic crisis in August, 1931, raised a number of problems of the greatest importance to industry. Appreciating that the benefits which would accrue to industry, both in the home and export markets, as a result of our depreciated currency, would last only so long as the general level of British prices was not raised, the Council strongly recommended to all members that prices should not be increased unless and until fully justified by prime costs. Industry as a whole wisely followed this course. While increased trade resulted, the advantages were, to a considerable extent minimised by other countries either following our example and leaving the gold standard, or reducing their prices to correspond with sterling. An immediate problem arose in regard to foreign contracts made on a sterling basis, as a number of cases at once occurred in which foreign traders supplying goods to this country attempted to repudiate their obligations unless they were paid on a gold basis. The Association at once communicated with the corresponding chemical bodies on the Continent asking for their co-operation and assistance in securing the observance of all international contracts, and was gratified to receive support from certain of these organisations. Arrangements were made with a view to possible future action for the preparation of a "black list" of firms who defaulted, but fortunately only one case was brought to the notice of the Association.

The "Buy British" Campaign

The economic crisis gave considerable impetus to the "Buy British" campaign initiated a short time before, and in connection with which the Association secured the co-operation on a reciprocal basis of the more important trade organisations of the country.

In view of the specially favourable circumstances for increasing trade subsequent to the departure from the gold standard, particular attention was given to all methods of co-operation which might assist the chemical industry. In the first instance the problems were studied by the Fine Chemical Group. Co-operative buying of raw materials was investigated, but did not appear to offer adequate scope for successful application. Co-operative publicity was explored and certain lines of action were adopted. Co-operation in manufacture, in order to prevent unnecessary overlapping and duplication of effort, was studied at some length and a scheme was formulated which, if carried out by members, would prevent several firms embarking on the manufacture of the same product in ignorance of the fact that some of their colleagues were doing likewise. The subject of co-operative selling has received attention on several occasions, in view of the adverse reports on British salesmanship by every British Mission to markets abroad in recent years. A start has been made by the preparation of a list showing the members of the Fine Chemical Group who have branch houses, representatives or agencies in the different countries and cities.

Fiscal Policy

The subject of fiscal policy at home and within the Empire has been the most important problem with which the Association has had to deal for many years. The Council gave instructions for the preparation of a statistical analysis of the position in regard to the chemical industry based on the official import data for 1929, the last year for which the full data was then available. The analysis showed that the imposition of a system of tariffs on chemicals might result in the direct additional employment of 20,000 to 25,000 men, quite apart from other accruing advantages in regard to reduction of costs, increase in export trade, etc. The Council therefore decided at its October meeting that immediate action should be taken to evolve a system of emergency tariffs for

during one of the most critical years the chemical industry has May 31, which will be presented at the annual meeting of the regret the death of four of the Association's most distinguished members—Lord Trent, the Right Hon. J. W. Wilson, Sir Richard Threlfall and Sir William Pearce.

the chemical industry on the lines advocated by the Fiscal Policy Committee of the Federation of British Industries on which the Association was represented, and to this end appointed a tariff sub-committee, whose proposals were considered in January, and the detailed recommendations for emergency tariffs on chemical products, covering the interests not only of the Association but of its affiliated associations, were adopted for transmission to the President of the Board of Trade.

Though the tariff policy in the Import Duties Bill did not follow the system of emergency tariffs which the Association and the Federation of British Industries had in mind, the agreed recommendations of the Association were largely responsible for securing the additional duties imposed on chemical products by the Import Duties Advisory Committee in April.

After the Association's memorandum was submitted, steps were taken to approach kindred associations which might be interested as users. Such co-operation proved of the greatest value when questions pertaining to additional duties and the Free List had to be considered.

The Free List

Meanwhile a National Government was returned to power with a mandate to take whatever steps it considered necessary to deal with the economic situation. When the Import Duties Bill was introduced, under which a general ad valorem duty of 10 per cent. was to be imposed, the Association was able, by immediate representation, to ensure that certain essential raw materials of the chemical industry were in the Free List in the First Schedule to the Bill. When the Act came into force on March 1, detailed applications for additional duties on the lines of the Association's recommendations for emergency tariffs were submitted in accordance with the provisions of the Act, as soon as the necessary data were secured from the firms concerned. The Association was gratified to find that the greater number of its recommendations were adopted in the First Report of the Advisory Committee. Further applications were submitted as circumstances warranted, while a close survey is being made of the import statistics month by month to see whether the duties already imposed are proving adequate.

The Import Duties Act provided, *inter alia*, for additions to the Free List, but only in cases of special urgency during the first six months. The Association, by immediate action, was able to secure the addition of a number of important raw materials, while now that the six months' period is at an end, it is submitting cases which could not previously have been justified on the grounds of special urgency.

Since the end of the year under review, the Association has taken action to assist its members in connection with the provisions of the Finance Act, 1932, for the free importation under licence of plant not obtainable in this country, and is now working on a scheme of drawback for chemical products. The Association also took steps to bring before its members a list of chemicals either not being made in this country or being made in insufficient quantities to meet the demands, and suggested a procedure by which duplication of effort in manufacture could be avoided.

The Ottawa Conference

In connection with the Ottawa Conference the Association circulated detailed import statistics for 1930, the last year for which available, in respect of Australia, Canada, India, New Zealand, and South Africa. The figures revealed that this country was getting only about 40 per cent. of the chemical trade of the Empire. Members were asked for their suggestions as to the tariff changes and British preferences necessary to secure a larger share of this import trade for the

United Kingdom. These suggestions were considered by the tariff sub-committee and memoranda were submitted to the Board of Trade showing for each of the Dominions the requirements of the British chemical industry. When it was learned that official industrial advisers had been appointed by the Government, and that it was desirable that the more important trade organisations should be represented at Ottawa in order to supply expert advice to these advisers, the Council decided that its chairman and general manager should represent the Association at Ottawa. Their report more than justifies the Council's action. Quite apart from the benefits in the way of increased preferences which will accrue to the chemical industry from the conference and towards which the Association's representatives were able to make a valuable contribution, the friendly contacts which they were able to establish with the chemical industry of Canada and the United States and the promises of co-operation for the future, would, by themselves, have been sufficient justification for their visit.

Safety Activities

The Association, through its Works Technical Committee, has maintained its safety activities. Eleven new Safety Circulars (Nos. 45-57) were issued, and the Quarterly Safety Summary was continued as a regular feature. The preparation of the remaining Section of Part II of the Model Safety Rules has, however, been held up by pressure of work due to tariffs and Ottawa.

The Works Technical Committee also considered the draft specification prepared, on its suggestion, by the British Standards Institution for "Manholes for chemical plant for pressures up to 250 lb. per sq. in." and made a number of suggestions which will enhance the value of the specification from the point of view of safety and practicability. Similar action was taken in regard to the draft specification for the identification of chemical pipe lines. The problem of the methods to be used for testing for dangerous atmospheres in connection with the cleaning of vessels and plant which have contained poisonous materials, was further studied in conjunction with the Home Office and the Chemical Defence Research Department, and a programme of chemical and physiological investigation was drawn up in reference to the substances most frequently encountered in industry, and will shortly be put in hand by the Chemical Defence Research Department. The Committee also made arrangements, in response to a demand from several members, for the preparation of a brief summary of the best methods of treating chemical burns produced by different substances, as there appeared to be much doubt as to the right method to use in any particular case. It is possible that this summary may take the form of a special chapter in a manual on First Aid in Industry, the preparation of which is now under consideration.

Joint Action

The Association has established a close liaison with the Chemical and Allied Employers' Federation in regard to safety matters. As a result of a recent threat by the Home Office that compulsory orders might be issued under the Workmen's Compensation Act, 1923, requiring the appointment of safety committees and whole-time safety officers, unless appropriate action was taken by the industries themselves, the Chemical and Allied Employers' Federation formulated a suitable scheme on behalf of the chemical industry. Under this scheme the Chemical and Allied Employers' Federation will be responsible for all matters pertaining to the organisation and supervision of safety arrangements, while the A.B.C.M., through its Works Technical Committee will, as heretofore, deal solely with the technical aspects of the subject.

When the Association heard that the Home Office Departmental Committee on Industrial Diseases was considering the question of adding poisoning by sulphuretted hydrogen and carbon monoxide and their sequelae to the schedule of industrial diseases under the Workmen's Compensation Act, a memorandum was submitted showing that the evidence available did not afford any support for the contention that poisoning by these gases complied with the requirements for a schedulable disease under the Act. Representatives of the

Association who had most experience of these gases appeared before the Home Office Committee and gave evidence. While the results of the inquiry have not yet been published, the impression has been gained that the Home Office Committee was in sympathy with the contention that there was no case for scheduling poisoning by these two gases, and their sequelae, as industrial diseases.

Standardisation

The Association gave its support throughout the year to the new British Standards Institution for the formation of which it was mainly responsible. The new Chemical Division, over which the chairman of its Council presides, has been active in reviewing the whole position in regard to chemical standardisation, and a number of committees are now engaged on several problems of special importance. The Council recommends that all members should support this standardisation movement.

The Resistant Metals Committee, which is a joint committee of the Association, and of the British Chemical Plant Manufacturers' Association, prepared a report on the use of stainless steel which was circulated to all members. The question of the further work of this committee is under consideration. Recently, questions have arisen regarding the difficulties of obtaining satisfactory British lead-lined chemical plant and chemical stoneware. At the request of the British Chemical Plant Manufacturers' Association, the Association agreed to co-operate in the investigation of the problem, and data is now being collected from members.

The Fine Chemical Group has continued to give consideration to means for reducing the imports of fine chemicals into this country, and given much study to various methods of co-operation. The monthly import statistics have been carefully studied and representations made to the Customs authorities in regard to cases where the values appeared to be under-declared. This continuous pressure is having its effect, but the hands of the Customs are tied by the unfortunate wording of the definition of value in the Safeguarding of Industries Act. The scheme for the collection of production statistics has continued to work satisfactorily.

Dyestuffs Industry

The Colour Users' Association put on record before the end of 1931 its opinion that it considered a tariff on dyestuffs would be prejudicial to its industries, and that while not receding from its previous declaration, it agreed that it would be preferable to extend the Dyestuffs (Import Regulation) Act for a further twelve months. The Act was duly extended under the Expiring Laws (Continuance) Act, 1931. Under the provisions of the Import Duties Act, all dyes imported into this country under licence become liable to the general revenue tariff of 10 per cent.

The subject of colours for foodstuffs received preliminary consideration in connection with the proposed revision of the Public Health (Preservatives, etc., in Food) Regulations by a Government Committee. The committee, however, ceased its work on the grounds of economy after the financial crisis of last autumn, so this contentious matter has been deferred until it is re-opened by the Government.

The chemical section of the 1932 British Industries Fair was definitely more attractive than usual, and the scheme of organised visits for science teachers and chemical students, now a recognised feature of the chemical section, is becoming very popular. A special feature was made on the Association's stand of new products developed during the previous year in order that the latest achievements of the chemical industry might be brought to the notice of the public in a more prominent manner. The exhibits selected gave publicity to the development of all-British bromides, made from bromine extracted from the Dead Sea.

Other matters referred to in the report include the successful work of the Joint Chemical Patents Committee in connection with the new Patents and Designs Act; the increasingly important operations of the Association of Tar Distillers; and a new service recently initiated by which members are advised monthly regarding second-hand plant available for sale and are themselves able to notify their colleagues if they have any apparatus for disposal.

Death of Professor Thomas Gray

Thirty Years' Work at the Royal Technical College, Glasgow

PROFESSOR THOMAS GRAY, LL.D., D.Sc., Ph.D., professor of technical chemistry at the Royal Technical College, Glasgow, and director of the Chemistry Department of the College, died on Monday, September 19, at Rotomahana, Elie. He had not been in good health for almost two years.

Educated at George Watson's College, Edinburgh, Professor Gray came to Glasgow in 1885, and entered the Andersonian College, in which he studied under Professor Dittmar. After a successful course of studies he proceeded in 1888 to the University of Jena, from which he returned in the following year to become assistant to Professor Dittmar, and later to his successor, Professor Henderson. In 1890 he graduated B.Sc. at London University, and in 1893 his connection with the Royal Technical College began with his appointment as lecturer in chemistry at the evening classes of the college. During the succeeding years he carried on his studies at various European centres, spending the summers of 1890 and 1890 at Jena, where he obtained the degree of Ph.D. In 1896 he had spent some time at the University of Heidelberg, and in 1902, a year after the University of Glasgow conferred on him the degree of D.Sc., he studied at the Zurich Polytechnic under Professor Lunge.

Research Work on Fuels

Professor Gray succeeded to the occupancy of the Young Chair of Technical Chemistry at the Royal Technical College, Glasgow, on the retirement of Professor Mills in 1903. He instituted the first classes in the college giving public instruction in fuels, a branch of chemistry in which he was recognised as a foremost authority, and also conducted large-scale experiments illustrating the operations of the chemical industry generally. His specialised knowledge and wide experience proved of the utmost value during the war period, when he supervised the chemical work carried out in Scottish gas works for the extraction of benzene and toluene for the Department of Explosive Supplies. During the same period he carried out a notable survey of the furnace and coking coals of Scotland, with particular reference to their suitability for use in blast furnaces and for the manufacture of coke, and early in 1918 he was asked by the Department of Scientific and Industrial Research to supervise the design and organisation of the Government Fuel Research laboratories at Greenwich. For three years he then acted as consultant to the Fuel Research Board.

The importance of Professor Gray's services during the war, no less than his eminence as a chemist, was recognised by his Alma Mater in 1924 when he received the honorary degree of LL.D. from Glasgow University. For 10 years he acted as secretary and for two years subsequently as chairman of the Scottish Section of the Society of Chemical Industry. He served also on various committees dealing with gas and fuel, including the Gas Education Committee of the Institution of Gas Engineers, the Scottish Coal Survey Committee, and the Committee on Sampling and Analysis of Coal (Fuel Research Board) of which he was chairman. As an examiner in chemistry he acted for the Faculty of Physicians and Surgeons of Glasgow, the Royal College of Physicians and Surgeons in Edinburgh, and Glasgow University.

Professor Gray was a familiar figure in Elie, where he had spent the greater part of the summer for almost 40 years. He is survived by his wife and two daughters.

Synthetic Resins from Petroleum Hydrocarbons

A NEW synthetic resin having various industrial applications has been produced from highly unsaturated petroleum distillates. This resin is produced by polymerisation and condensation of suitable distillates in the presence of aluminium chloride. The characteristics and yield of the resin are controlled by regulation of various factors in the resin formation. The reactions involved are many and very complex, probably including the reaction of olefines to form oily polymers, reaction of olefines with aromatics to form substituted aromatics, polymerisation of diolefines and olefines to form resins, and reaction of diolefines with substituted aromatics to form resins.

Reform for Food and Drug Laws

Views of Another City Analyst

MR. H. H. BAGNALL, the Birmingham City Analyst, has issued his annual report on the work of his department for 1931, and, like the city analyst of Salford whose report was referred to in THE CHEMICAL AGE of September 3, he has emphasised the need for reforms in the Food and Drugs Acts. In the early part of last year a committee was set up by the Ministry of Health to inquire into the working of the laws as to the composition and description of articles of food other than milk and to report what alterations, if any, in the law or its administration appeared to be desirable.

The appointment of that committee was, says Mr. Bagnall, a recognition of the fact that the law relating to foodstuffs is in need of revision both from its strictly legal aspect and with regard to the necessity for definitions and standards. Unfortunately, before the committee had had the opportunity of hearing more than a small part of the evidence necessary, the Ministry of Health decided that its work was to be suspended in connection with measures of economy resulting out of the financial situation. The question of the resumption of the committee's work is, however, to be reconsidered at a suitable opportunity.

Misleading Advertisements

Mr. Bagnall says in his report that apart from the actual labelling of an article of food, the way in which it is advertised is important and is a matter which should come within the cognisance of such a committee. Advertisements may quite often, by an ingenious twisting of the truth, lead purchasers to believe that they are getting an article of superior quality, the actual fact very often being that it is no better than, and possibly inferior to, a similar product sold under the same name but without any putting advertisements. Any new advance in science is promptly used by the more unscrupulous manufacturers as an aid to increase their sales, even in cases where the application of the new scientific fact to their particular wares is not by any means obvious. The discovery of vitamins, for instance, has been followed by a crop of dubious claims on the part of certain makers as to the vitamin content of the particular articles in which they are interested, and these elusive substances have cropped up in the most unexpected quarters.

The therapeutic value of ultra-violet light has, similarly, been used with great effect. The crux of the whole matter is that in the absence of any recognised standard of composition for any foodstuffs except condensed and dried milks, butter, margarine and spirits, manufacturers are strongly tempted to describe their own particular product in extravagant terms in order to outbid their competitors in an attempt to catch the public eye.

Need for Official Standards

The Condensed and Dried Milk Regulations, which provide for a definite and unambiguous label, have tended to raise the general standard of quality and also to prevent the spread of inaccurate and misleading information as to the quality of the article in the tins.

It is necessary that in the first place official standards should be set up for certain foods so that the purchaser may know the approximate composition of the article which he buys under a particular name, and articles not coming up to this standard should be labelled accordingly and the approximate composition given. All additional claims as to quality or composition should be capable of proof, and failure to substantiate these should be an offence against the Food and Drugs Acts.

Methods for the Analysis of Aluminium

THE committee and analysts appointed some two years ago by the Aluminium Research Institute to survey, test and check the methods in vogue and to draw up new methods, both for sampling and analysing aluminium and its alloys, based on the data accumulated, has now printed these methods in a booklet issued by the Aluminium Research Institute, 308 West Washington Street, Chicago, Ill. The methods, as finally approved, were based on co-operative work carried out on standard samples.

Manufacture of Solvents from Corn Starch

Fermentation at the Works of Commercial Solvents Corporation

NORMAL butyl alcohol, known also as butanol, is now a product of extreme industrial importance, since it serves as a raw material for the manufacture of *n*-butyl acetate, the most widely used of all the cellulose-nitrate solvents. It possesses the unique property of being a solvent for hard copals; it dissolves kauri, congo, manila, dammar, sandarac, elemi, shellac, ester gum, urea-formaldehyde resins, benzyl abietate, metallic resins, castor oil and linseed oil, but does not dissolve cellulose esters or ethers. The addition of a small quantity, as small as 3 per cent., will also cause the homogeneous mixing of methylated spirit with petroleum hydrocarbons. In addition, butanol and its derivatives are employed in more than forty industrial processes, including the manufacture of paper, textiles, rubber, artificial leather and dyestuffs.

The greater part of the butyl alcohol of commerce is made

the actual fermentation, and the distillation of the products. All kinds of corn can be utilised, but since it is only the starch which is converted into solvents, it is usual to remove all other commercially valuable parts of the corn kernel. The corn is therefore ground and by various milling operations the corn kernel is separated into bran, crude starch and the "germ." The latter is pressed for the extraction of oil which finds a ready market among manufacturers of salad dressings and soaps. The residue of "corn germ meal," like the corn bran, is then utilised for animal feeding. The crude starch, on the other hand, is mixed with water in large vats or mash tuns, and this mixture is transferred to closed tanks where it is heated at high temperature until a thick paste is formed and the mass is completely sterilised. From these so-called "cookers," which have individual capacities of 10,000 gallons, the corn paste is forced under pressure



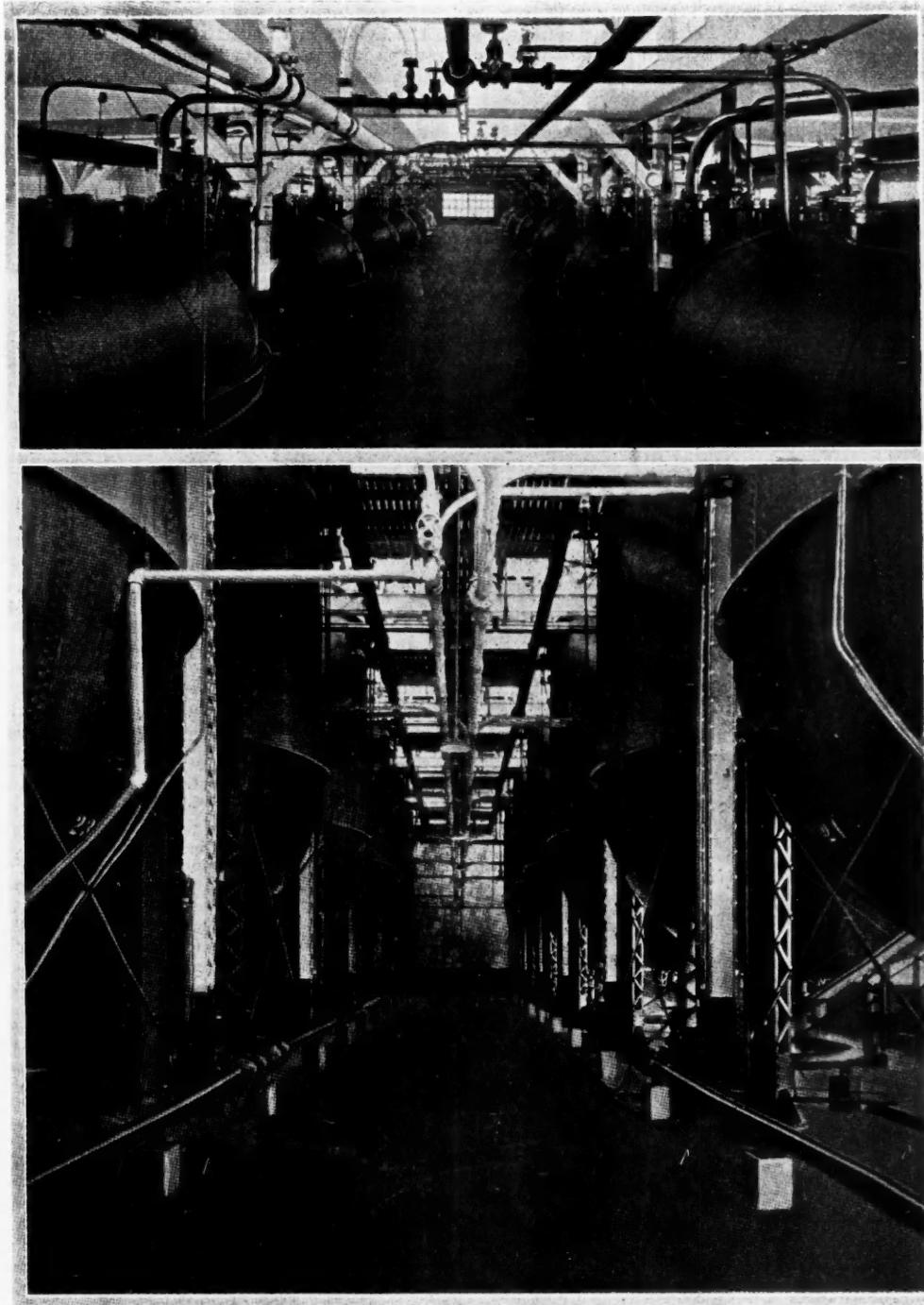
Eighty-Gallon Culture Tanks, for the Propagation of Bacteria used in the Fermentation of Corn Starch Paste, at one of the Works of Commercial Solvents Corporation.

by the Commercial Solvent Corporation, whose works are in the United States, at Terre Haute (Indiana), and Peoria (Illinois). At both of these places corn and coal, the principal raw materials, are available at favourable prices, and a fermentation process of manufacture is employed. This process, which is protected by patents controlled by the corporation converts the corn starch into butanol, acetone and ethyl alcohol. During the fermentation large volumes of carbon dioxide and hydrogen are evolved and these gases are transformed at high pressures into methanol. Carbon dioxide gas in excess of the amount required for the manufacture of methanol is delivered by pipe-line to an adjacent plant where it is converted into solid carbon dioxide, used as refrigerant under the name of "dry-ice." Butanol, the principal product, finds its largest use in the manufacture of lacquer. Acetone is consumed in the manufacture of artificial silk, photographic films and for the storage of acetylene gas in cylinders; whilst methanol is the basic material employed in the manufacture of formaldehyde, which is, in turn, necessary for the production of synthetic resins and many other plastics.

The manufacturing process may be divided into four steps: the preparation of the corn, the propagation of the bacteria,

through water-jacketed coolers which reduce its temperature to 98° F., and thence it passes into the actual fermenting tanks which are of 50,000 gallons capacity.

The propagation of the bacteria, which are essential to the fermenting process, starts in the laboratory where the inactive *Clostridium acetobutylicum* is seeded in glass tubes holding about an ounce of thick corn starch paste. These tubes are then maintained at a constant temperature of 98° F., when the bacteria become active and increase in number, whilst the starch paste is converted into a thin watery liquid. This process of multiplication is carried out for five successive days, during which time the bacteria increase so enormously in numbers that it is necessary to transfer them (at intervals of 24 hours) from the glass tubes to one-quart glass flasks, then to 10-quart flasks, to 80-gallon steel culture tanks and finally to 800-gallon tanks. From these tanks, after the fifth day of propagation, the bacteria are transferred to batches of 40,000 gallons of corn starch paste, where fermentation proceeds and the starch is converted into butanol, acetone and ethyl alcohol, whilst large volumes of carbon dioxide and hydrogen are evolved as fermentation gases and are passed on to other parts of the plant for profitable utilisation.



Manufacture of Butanol, Acetone and Ethyl Alcohol, at one of the Works of Commercial Solvents Corporation.
Above: 50,000-Gallon Fermentation Tanks (Original Type), Upper Level. *Below:* Fermentation Tanks (New Type), Lower Level.

When the fermenting tanks have been loaded with their charge of corn starch paste and the requisite quantity of bacteria has been added, there is no immediate fermentation observable. It is only after the lapse of four or five hours that the starch paste begins to liquefy and bubbles of gas form and break on its surface. As time passes the mass, which was originally of jelly-like consistency, becomes a thin watery liquid, and gas is given off in increasingly larger volumes until, after 24 hours, the contents of the tank are seething and foaming. It is then that the generation of gas gradually subsides, until the fermentation is completed after a total duration of about 48 hours. The actual amount of solvents formed in any one tank is dependent upon the amount of starch originally present, but the kind of solvent and their percentage relationship never shows any appreciable variation. Butanol, acetone and ethyl alcohol are

always formed in the approximate ratio of six parts of butanol to three parts of acetone and one part of ethyl alcohol.

When the fermentation process is complete, the resulting liquid is transferred to the distillation plant, where the solvents are separated from the water. Finally the mixture of solvents is subjected to fractional distillation by means of which the three individual components are separated.

The Commercial Solvents Corporation maintains extensive research laboratories for the purposes of widening the outlet for its existing products, and for the development of new processes and materials. Among the many derivatives of their primary chemical manufactures are butyl aldehyde, butyl acetate, dibutyl phthalate, butyl chloride, butyl stearate, butyl lactate, butyl acetyl ricinoleate, dibutyl tartrate, diacetone alcohol and monomethylamine.

National Certificates in Chemistry

Report on the 1932 Examinations

THE Council of the Institute of Chemistry has received and adopted the report of the Joint Committee of the Board of Education and the Institute on National Certificates in Chemistry. The assessors were Professor G. T. Morgan, Professor T. Slater Price, and Professor J. E. Coates. Five schools submitted candidates for the first time in the senior grade and two in the advanced grade. The number of entries in the senior grade was 200, of whom 120 passed. In 1931, there were 105 candidates, of whom 108 passed. In the advanced grade there were 88 candidates, of whom 65 passed. In 1931, there were 71 candidates, of whom 48 passed. Of the 88 candidates, 63 had previously obtained the ordinary certificate, and of the 65 successful candidates, 47 had previously obtained the ordinary certificate.

According to an abstract of the report which appears in the current issue of the Institute Journal the standard attained by candidates in inorganic chemistry, theory, was much the same as last year. There was still a marked tendency to make clumsy statements in such a way as to show that they were purely a result of memory, without any understanding of the principles underlying them. This was especially noticeable in the use of formulae, both chemical and mathematical. Facts can only be properly appreciated when the principles on which they are based are understood. If chemistry is taught simply as a mass of facts, the student will be hopelessly confused when he comes to advanced stages.

It was again noticeable that the standard in inorganic chemistry practical work was appreciably higher than in the theoretical. The results obtained in the quantitative work were generally of a high order of accuracy. It is still necessary to emphasise that dry tests are important even in those qualitative exercises which are not to be solved by dry tests only. Candidates' descriptions of the quantitative work were more satisfactory than those of the qualitative exercises, which were often given in a slovenly manner and were difficult to read. A student should realise that a clear and concise report of his work is very important. The work in the advanced grade was again of a high standard, the accuracy attained in the quantitative work being very noticeable.

Organic Chemistry

The paper in organic chemistry theory contained a judicious choice of questions arranged to cover fully the syllabuses of instruction. A question on the comparison between aliphatic and aromatic amines brought forth adequate reports on the preparation and properties of these important substances. References were made to the differences of origin and basic strength and to the action of nitrous acid on the amines and their salts. Alkylation was mentioned, and the carbonylamine mustard oil tests were also indicated. The less satisfactory replies to this question stated that aliphatic amines were decomposed by alkalis, liberating ammonia. The methods given for the preparation of aliphatic and aromatic amines, by the action of ammonia on alcohols and phenols respectively, were more probably derived from an intelligent anticipation of the results of high pressure chemistry than from a knowledge of commonly accepted facts.

Answers to questions on the chemical reagents used to distinguish various organic types showed evidence of sound teaching on modern lines. For instance, 3:5-dinitrobenzoyl chloride was suggested as a means of characterising alcohols. To this reagent might be added phenylcarbimide and its analogues, utilisable in yielding well-characterised derivatives of both alcohols and phenols from which these hydroxyl compounds are readily regenerated. For ketones and aldehydes, 2:4-nitrophenylhydrazine is to be recommended. References to high pressure syntheses are beginning to appear in the answers to both grades, but are presented somewhat at random. In the higher grade, descriptions of the methanol syntheses were incomplete and misleading.

Chemical Technology

The papers in the technological subjects were discriminating, in both the theoretical and practical examinations. It might be advisable in future years, however, to include in the written papers a greater proportion of questions bringing out the chemical principles underlying the respective branches of chemical technology. In connection with the dyeing of cotton and artificial silks an accurate survey was often made of the dyestuffs appropriate to the different textile fibres. Special attention was directed to the use of azoic colours, vat colours, ionamines and S.R.A. dyes. Some confusion of thought was manifested in regard to the old natural dye, cutch, which was stated to be not an ordinary dyestuff, but a coloured inorganic compound. Some candidates mentioned its application to cotton in conjunction with copper salts, but added tannic acid as a part of the complex mordant. Satisfactory answers were received on the application of sulphide dyes and on the chemical nature of direct cotton dyestuffs, suitable for development after dyeing. Reference was also made to the use of vat dyes either on reduction or in their solubilised condition.

Candidates had a good knowledge of the methods of identifying dyes and textile fibres, and of the chemical classification of dyestuffs. Occasionally, lapses occurred even in regard to the nature of such old colouring matters as Naphthol Green B. In other cases somewhat scrappy information was given on the chemical constitution of Naphthol AS and its analogues. Comparatively few candidates attempted constitutional formulae even for such relatively simple or well-known dyes as Malachite Green and Dianisidine Blue. In the practical examination assays of spermaceti and of mixed oils were accurately carried out. The papers set on theoretical metallurgy offered a judicious choice of questions devoted partly to chemical principles and partly to technical processes. In the practical exercises the preparations and assays were successfully accomplished.

In general, the papers set were of satisfactory standard, and only a few additions were made to the draft papers. On the whole, it may be said that the scripts were fairly well written, but there is still much room for improvement in diagrams. While some good answers were received, many showed lack of interest and attempts to memorise that which was not understood.

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Indian Chemical Notes

Soil Research in Punjab

The Imperial Council of Agricultural Research has made a grant of Rs. 600,000 (£44,750), spread over a period of five years, for a scheme for the development of scientific research in soils. The proposed investigation, namely, the solution of such problems as the prevention or cure of the progressive salinity of soils with a rising water table on the treatment of unproductive alkaline soil so as to render and maintain them fertile, were of enormous importance to the Punjab economically. The proposed scheme would also be of practical advantage to the United Provinces, Sind, and a few other provinces, where similar soil conditioning problems have arisen.

Tea Manuring

The tea planters of South India are considering whether they should continue manuring of tea, in view of the depressed prices of tea in the world market. In some places an attempt at economising has been made by eliminating the use of all but nitrogenous fertilisers. But the probable results of this will cause leaf diseases, secondly stem diseases, and finally root diseases. It is stated that compound fertilisers, such as Ammo, Phos and Niciphos, will probably prove cheaper than a mixture of sulphate of ammonia and superphosphates where transport charges are high. The application of concentrated nitrogenous fertilisers, even when supported by other fertilisers, should not be excessive in amount.

Sulphide Minerals in Mysore

A recent survey of the minerals of the Chitaldrug district of Mysore has shown indications of sulphide minerals for a distance of over 15 miles. In the north of the district a good extent of the ferruginous gossan containing chiefly limonite and quartz has been found. Among the lead ores of the area, the galena has a high silver content, and is also free from the contamination of the other sulphide minerals. It can easily be separated from the gangue. The actual tonnage and quality of the ores which the area might yield have to be ascertained only by extensive work on large-scale developments, but the preliminary tests carried out so far are by no means discouraging.

Chemical Technology

The University of Bombay has resolved to start a Department of Chemical Technology, and has donated Rs. 5½ lakhs (£41,250) for the purpose. For the present, provision will be made for teaching of textile chemistry and chemical engineering, and the department will, in the first instance, be located at the Royal Institute of Science, with the permission of the Government, while the Government will also be approached for financial assistance to the Department. The assistance of the Bombay millowners will also be sought to put the Department on a sound basis. There is no doubt that a department of this type will be of great assistance to the industry, apart from its general usefulness. A well-equipped laboratory will be established, and a full-time professor will be appointed in the first instance.

Manganese in Tea

It has long been known that tea contains a large amount of manganese. Preliminary experiments have been made in the laboratory of the United Planters' Association in South India, with the idea of finding whether it is of any significance in manufacture, and whether it could be employed as a clue by which to detect adulteration. Experiments so far show that there is a less variable relationship between the amount of manganese in the extract and the total amount of manganese present in the original black tea. From the theoretical point of view, the presence of manganese is most suggestive, since it is known to have an important influence on enzyme action. The presence of enzymes of the peroxidase type in tea appears to have been proved and Perrin claimed that peroxidase could be formed by the interaction of a manganese compound with a hydrophilic colloid. The formation of such a peroxidase during withering can be readily explained if Perrin's idea is correct.

Developments in Alkali Manufacture

Conversion of Sodium Chloride

An unexpected reaction takes place on passing carbon dioxide into a solution of sodium chloride in liquid ammonia at a temperature of -10° C. or higher, for white crystals separate out consisting not of ammonium carbamate but of sodium carbamate, NaCO_2NH_2 , in almost the theoretical yield. On the laboratory scale the latter is converted without difficulty into sodium carbonate at a temperature of 100 to 300° C., and large scale trials are now in contemplation in Japan. ("J. Soc. Chem. Ind. Japan," August, 1932, p. 305). Sodium carbonate of a high degree of purity should be obtainable in this way, for the solubility of sodium chloride in liquid ammonia incidentally leads to an efficient method of purification of rock salt. All the common impurities in rock salt, including magnesium chloride, ammonium sulphate, potassium chloride and potassium sulphate, are insoluble in liquid ammonia. Extraction with the latter, followed by filtration and evaporation is found to yield an extremely pure (99 per cent.) sodium chloride.

William James Memorial Prizes

Essays on Electrodeposition of Metals

To commemorate the work of the late Mr. William James, the first hon. treasurer and one of the founders of the Electroplaters' and Depositors' Technical Society, the Council of the Society has decided to inaugurate two annual prizes for the best essays or papers written by a student, apprentice, learner or other young person connected with or interested in the electrodeposition of metals. Persons under 21 years of age on January 1, 1933, irrespective of the fact that they may not be members of the Society, are eligible. Essays are to be on any practical or technical aspect of, or process in, electrodeposition with which the candidate is personally acquainted; alternatively, one of the following subjects must be selected: (1) The importance of a knowledge of chemistry in electroplating; (2) the probable future of the electroplating industry; (3) the chief requirements of nickel and chromium plating from the users' point of view, or (4) the application of mass-production methods to electroplating. Manuscripts must be submitted on or before January 1, 1933.

Leather and Rubber

I.C.I. Exhibits at Shoe and Leather Fair, 1932

IN the leather section of the Shoe and Leather Fair, 1932, the Dyestuffs Group of Imperial Chemical Industries will be showing dyestuffs for use on all types and tannages, chrome liquors and chrome sulphate for the chrome tanning of leather, and Kromolines for "oiling-off," drum oiling and fat-liquoring. Kromolines are sulphonated cod-oil products for use on leather and were originated by Levinstein, Ltd. An entirely new product will be shown in Neron Glazing Finish A. This is intended for use as a "season" for conditioning dyed chrome leathers, either alone or in conjunction with pigment finishes. After glazing under the jack the leathers have a fine clear glossy surface which shows no tendency to cracked glaze.

On the rubber side of the exhibition, a special feature will be made of the reinforcing softener "Vulcatac S." This product is of special interest to the shoe and leather trades since it enables a very high proportion of gas black to be milled into rubber and it is well-known that the very basis of the leather-like rubber compounds is the presence of a large quantity of gas black. Special Kosmos blacks will also be shown with outstanding characteristic, such as minimum adsorption of accelerator, and excellent ease of dispersion in rubber. The exhibit will include a complete range of Vulcafor accelerators, among which are accelerators which show a minimum adsorption of gas black and are thus of special interest in the compounding of rubbers for shoes; a complete range of Vulcafor rubber colours for the production of bright bathing shoes; and special thermo-hardening and air-drying Paralac varnishes which can be used in the manufacture of shoes.

The Institute of Metals

Programme for 25th Anniversary Year

THE Institute of Metals has issued a comprehensive programme of meetings to be held during the ensuing 12 months. The coming year promises to be a notable one in the history of the Institute in that it marks the 25th anniversary of its foundation. The 25th annual general meeting will be held on March 8-9 in London, whilst the autumn meeting, which will constitute the real anniversary gathering, will be held in September at a provincial centre. The remaining general meeting will be held on the occasion of the twenty-third annual May lecture, to be given in London on May 10.

The programme includes over 40 lectures and addresses to be given before the six local sections of the Institute in Birmingham, Glasgow, London, Newcastle-on-Tyne, Sheffield and Swansea. Among the papers to be read before the Birmingham section will be those on "Heat Treatment without a Detrimental Finish" and "Welding of Copper." The London local section will have an address by the president, Sir Henry Fowler, on "Non-Ferrous Metals and Alloys in Railway Engineering"; there will also be an open discussion on "Non-Ferrous Metals in the Food Industry," this constituting a joint meeting with the Food Group of the Society of Chemical Industry. The programme of the Glasgow section includes a paper on "Modern Light Alloys, with particular reference to Corrosion." Before the North-East Coast local section, which is centred at Newcastle-on-Tyne, there will be given a paper on "Corrosion of Metals in Salt Solutions and Sea-Water," this being a joint meeting with the Society of Chemical Industry. Sheffield members will hear a lecture by Mr. W. R. Barclay, vice-president, on "Nickel Silver Alloys for the Electro-Plate Trades"; whilst before the Swansea local section there will be presented a paper on "Rolling."

Copies of the programme may be obtained from the secretary, Mr. G. Shaw Scott, 36 Victoria Street, London, S.W.1, who will also be glad to forward particulars of membership of the Institute to anyone interested. A membership election is due to take place on October 27.

Bussey Coal Distillation Process

Glenboig Works to be Re-opened

THE Scottish Gas Utilities Corporation announces that it has just completed an agreement to take over the whole of the Bussey plant at Glenboig, near Glasgow, for the low-temperature carbonisation of coal on a scale nearly four times greater than the previous output of the works. The corporation has been specifically formed to purchase the plant. Its chairman is Mr. Charles Hanrahan, of Sundridge Park, Bromley, who is a director of the Financial and General Trust, Ltd., and the Dispersold Syndicate, Ltd.

The whole of the plant is to be re-conditioned and the works extended. A start is to be made immediately with alterations, and it is expected to have them completed by the end of October, but no definite date for the re-opening of the works has been announced. When formerly in operation the Bussey plant provided employment for a staff of 65, but it is now proposed to increase the number of employees to about 200. The treatment of a maximum of 400 tons of coal per day is contemplated, beginning at the initial stage with a smaller quantity. Mr. O'Brien will be the general manager, and Mr. Wright the consulting engineer.

The Glenboig works were opened three years ago by the Bussey Coal Distillation Company, Ltd., with an authorised capital of £280,000, all of which was issued and paid up. In November, 1930, the works closed down temporarily, and in the report for the year ended in June, 1931, it was stated that the funds had been exhausted. A circular to shareholders, issued two months ago, stated that the plant at Glenboig had been purchased by the Financial and General Trust, Ltd., who would operate the plant on such terms that they would give the Bussey Company full advantage of all their experience and discoveries.

National Science Libraries

Suggested International Catalogue

SPEAKING at the opening of the annual conference of the Association of Special Libraries and Information Bureaux at Oxford on September 22, Sir Charles Sherrington, the president-elect said that it had been estimated that the number of papers on physiology appearing during the year had risen from 3,500 in 1905 to 18,000 five years ago. If that was the number in an isolated subject like physiology, what must be the case in such a subject as engineering, he said. They ran the risk of being snowed under—if not being able to keep pace intelligently with that enormous output. Even at the Science Museum Library, at South Kensington, the largest of its kind, only 8,000 out of 26,000 periodicals were taken in.

In time he hoped that governments throughout the world would combine with the association to make an international catalogue of scientific subjects. The Royal Society had spent at least £150,000 in trying to keep count of the scientific journals, but this work had been stopped. He hoped to see in the future national science libraries set up where one could get on payment of a sum all the information one needed on any subject or be informed where to get it.

The New Physical Society

Formal Dissolution of the Optical Society

AT a special general meeting of the Optical Society, held at the Imperial College of Science and Technology, South Kensington, on September 22, the Society was formally dissolved. This was the final step in the process of amalgamation of the society with the Physical Society of London, which has already made the necessary changes in its constitution. The joint societies will be known as the Physical Society, and the first meeting of the new session will be held on October 7, at 5 p.m., at the Imperial College of Science and Technology, South Kensington, when Dr. J. W. French, F.Inst.P., will lecture of "The Manufacture of Optical Glass."

Presiding at the final meeting of the Optical Society, Professor A. O. Rankine said the society had carried on its activities for 33 years. From the formal terms of the resolution alone it would appear that the society was to die, but that was far from being the case. It was indeed to avoid that gloomy ending that the council had advised the happier alternative of amalgamation with the Physical Society. Although formally the Optical Society would be dissolved, its members would form an important part of the Physical Society, and would continue to enjoy benefits certainly not less than could have been provided by the Optical Society continuing alone. Every member of the Optical Society, subject to his consent, would belong to the joint society. An overwhelming consensus of opinion in both societies approving the proposal to amalgamate was shown in the recent referendum. They would be part of a really strong scientific society, and their special branch of optics would find greater scope by reason of closer contact with those other branches of physics with which it was in so many ways connected already.

German Export Trade in Plastics

GERMAN exports of plastics materials which increased steadily up to the peak year of 1929 have rapidly dropped since. Shipments of celluloid have been 4,144 metric tons in 1929; 3,218 tons in 1930; 2,757 tons in 1931; and only 544 tons in the first four months of 1932, with corresponding decreases in value. Exports of "substitute celluloid, galalith, and synthetic resins" during the last few years amounted in 1929 to 4,984 tons; in 1930 to 1,531 tons; in 1931 to 1,249 tons, and in the first four months of 1932 to 368 tons. Great Britain continues to be the principal market for German plastics, absorbing about one-fourth of the total shipments of raw materials. Other important markets are Czechoslovakia, Italy, Austria, Spain, Poland, and Argentina.

Colloids and Textiles

Faraday Society Conference at Manchester

SIR ROBERT MOND, the president of the Faraday Society, presided at the three-day conference on the colloid aspects of textile materials which opened at Manchester University, September 21. A welcome to the conference was extended by Mr. D. C. Henry, director of the Thomas Graham Colloid Research Laboratory, on behalf of the University, and in particular, on behalf of Professor Lapworth and his staff. Mr. George Garnett, president of the Textile Institute, in the name of the institute also welcomed the gathering. He said they were feeling the necessity of a close collaboration with science in the development of the textile trades.

Among the distinguished guests who attended the conference were Professor R. O. Herzog (Berlin), Professor H. Mark (Vienna), Professor H. Staudinger (Freiburg), Drs. E. H. Büchner and J. R. Katz (Amsterdam), Dr. M. Mathieu and Professor O. Roehrich (Paris), Dr. de Witt Smith (New York), Professor E. Elod (Karlsruhe), Dr. P. Krais (Dresden), and Dr. Van Iterson (Delft). These guests were entertained to dinner at the Midland Hotel, Manchester, on September 22, the second day of the conference.

Professor Mark reviewed briefly the subjects of the papers to be discussed during the first part of the conference. The outstanding feature of the meeting, he said, was that nearly everyone brought forward a new method of attacking the problem of structure of fibres.

The papers submitted and discussed on the first day dealt with the general question of raw materials and their construction. The first, by Professor H. Mark, was on the "Fine structure and mechanical properties of fibres." At the outset of this paper, Professor Mark observed that the fact that we use cellulose compounds to such a large extent in the textile industry is due not so much to the outstanding chemical behaviour of fibres consisting of this material as to its unusual mechanical strength. The strongest fibres of cellulose or its compounds were superior to most metal wires. Only very good steel, tungsten, tantalum, and some other of the heavy metals were better than cellulose in respect of tensile strength. This remarkable experimental fact led them to investigate more thoroughly the mechanical behaviour of cellulose, and to try to find a connection between this important macroscopic peculiarity and the structure model, which is adopted to-day for the fine structure of cellulose fibres by the majority of investigators.

Chemical Developments in 1931

An Analysis of British Statistics

BRITISH chemical developments in 1931 and the early part of 1932 are the subject of Trade Information Bulletin No. 809, which has been issued by the United States Department of Commerce. It is pointed out that the British chemical industry, along with industry in general, felt the effects of the unusual financial and political developments of 1931 and early 1932. Towards the close of the year the almost continuous decline in activity evident up to that time was checked and there were signs of renewed confidence combined with greater activity in many lines.

Foreign trade in chemicals and allied products in 1931 showed decrease in values, especially in exports of domestic products. The balance of trade continued favourable but by only a slight margin, less than £100,000 for the entire year of 1931. In the first quarter of 1932, however, trade improved and the margin was increased to £400,000. Exports of chemicals and allied products in 1931 were valued at £19,855,000 and net imports at £19,762,000, with corresponding figures for the January-March, 1932, period, £5,046,000 and £4,646,000 respectively. Chemical production, which had declined steadily in the first three quarters of 1931, showed great improvement during the last quarter and the first quarter of 1932. With the increased production toward the end of the year, there was a consequent decrease in unemployment. This improvement continued so that in March, 1932, less than 17 per cent. of all insured persons in the chemical industry were registered as out of work, a condition much better than for all industry, which recorded 21 per cent.

This bulletin is the fifth report on British chemical developments which has been issued by the United States Department of Commerce, similar surveys having been published since 1926. Other bulletins have been issued on the chemical industries and trade of France, Germany, Italy, Czechoslovakia, Poland, Portugal, Sweden, Norway and Denmark, Switzerland, and Brazil.

Chemical Imports in India

Increase during June Quarter

A SURVEY of the import trade of India during the first three months of the fiscal year, April 1 to June 30, 1932, prepared by the British Trade Commissioner at Calcutta, has been issued by the Department of Overseas Trade. The report states that the total trade in chemicals, which in 1931 had fallen from £545,625 to £519,375 increased in 1932 to £571,875, but details of the countries of origin are not available. The principal items included under this heading are as follows:—

	1931.	1932.
	£	£
Acids	15,000	18,750
Bleaching powder	16,875	16,875
Carbide of calcium	15,000	16,875
Disinfectants	22,500	11,250
Potassium chlorate	7,500	20,625
Sodium bicarbonate	15,000	15,000
Sodium carbonate	150,000	151,875
Caustic soda	60,000	65,625
Sulphur (brimstone)	30,000	45,000

There was a decline in the total imports of drugs and medicines from £341,250 to £300,000 due principally to a decrease in the imports of drugs and medicines, other sorts, from £168,750 to £148,125, and proprietary and patent medicines from £71,250 to £56,250. The principal items in this trade are as follows:—

	1931.	1932.
	£	£
Camphor	45,000	40,875
Proprietary and patent medicines	71,250	56,250
Quinine salts	45,000	37,500
Saccharine	5,625	7,500

Details of the countries of origin are not yet available.

Dyes, Paints, Colours and Soaps

The classification of dyes obtained from coal tar has been revised as from April 1, 1932, and it is therefore not possible to give comparative statistics. The total imports of dyes obtained from coal tar in 1931 amounted to 3.6 million lb., valued at £446,250. In 1932 it had been increased to 6.3 million lb., valued at £720,000. Details of the countries of origin are not available.

There was a slight increase in the total trade in paints and colours from £129,375 to £131,250. The United Kingdom share was increased from £768,875 to £84,375, and the share of Japan from £5,625 to £10,250. There was a slight reduction in the imports from Germany from £16,875 to £15,000, while the share of the United States remained steady at £5,625.

There was a slight fall in the total imports of soap from 97,291 cwt. valued at £208,125 to 95,631 cwt. valued at £202,500. The imports from the United Kingdom, however, increased from 81,269 cwt. valued at £172,500 to 83,913 cwt. valued at £176,250.

Brine Found Under Moscow

An Important Soviet Discovery

BRINE with a density of salt five times greater than that of the Black Sea is found to underly the city of Moscow. The discovery was made by a geological engineer, Dmitri Perkin, who after three years of persistent work, brought in an artesian well on the premises of the Bolshaya Ordinka 32, in the Za Moskvorech'ye district.

At a depth of 732 metres, which is the limitation of the special core drill used for the purpose, the dense liquid was forced to the surface and flooded the surrounding yard. Chemical analysis of this liquid revealed the deposit to be somewhat similar to the world-famous brine deposits of the northern Urals, but it also contains chemical properties identified with the equally famous Bakhmut mineral deposits.

News from the Allied Industries

Leather

THE GENERAL ECONOMIC DEPRESSION which affected Netherland trade and industry with full force in 1931 also had a detrimental influence on the leather industry. Although tanneries operated at practically full capacity during the early part of the year, margins of profit were reduced to a minimum and orders were frequently accepted at prices much below actual cost. Activities were gradually reduced in the latter part of the year—particularly during the last quarter. On October 1, 1931, there were 69 tanneries operating in this country, employing 3,035 factory workers.

Iron and Steel

THE AUGUST PRODUCTION RETURNS reflect mainly the holiday inactivity and the completion of some large Russian orders. One additional furnace was blown in during the month, and three more during September, raising the total number in blast to 60. The recent increases in Continental steel prices amount to 3s. or 4s. per ton upon a gold basis, and, after scaling them up by the depreciation of sterling and the tariff of 33½ per cent., the total increase in the British market becomes one of 5s. 6d. to 7s. 6d. per ton. There are also prospects of further increases and even of a revival of the International Steel Cartel. This has improved the general tone of the British industry, and Middlesbrough and Scottish ironmasters report a slight improvement in sales of pig iron.

GERMANY'S RAW STEEL OUTPUT in August declined by 12,000 tons, to 416,000 tons, while the production of the rolling mills was 41,000 tons lower at 269,000 tons.

Mineral Oil

STOCKHOLDERS of the Standard Oil Co. of Kansas, with a capital of approximately £2,000,000, have voted to sell the company's property to the Standard Oil of Indiana.

THE INTERNATIONAL OIL CONFERENCE, at Paris, ended on September 22. The Roumanian group is now in complete agreement with the International group. The Roumanian delegation has received full powers from producers at home. Final ratification of the convention entered into in July has been agreed to, and it will come into force as soon as the internal measures requisite for its working have been taken in Roumania. These measures relate to the respective shares of producers. Roumanian small producers have been asking for special treatment, as they say they have not lately increased their production. The object of the convention is to prevent undue competition, and for that reason export quotas have been fixed.

THE SOVIET OIL SYNDICATE has concluded a five-year contract for the sale of a considerable quantity of benzine to Japan, as the result of a visit of a prominent Japanese industrialist, Kodzhiro Matsukata. This marks the first appearance of Soviet benzine in the Japanese market and may stimulate the commercial relations of the two countries.

China Clay

THE TRELAVOUR AND WESTERN CHINA CLAY WORKS, with three drying kilns at St. Dennis, and the Littlejohn China Clay Works with one large drying kiln at Carbo Roche, were offered by auction at St. Austell last week. The auction was held by order of the Chancery Division of the High Court. These properties had been worked for many years by the United China Clay Co., Ltd., the vendors being the Paper Makers Importing Company (Inc.), the plaintiffs in the debenture holders action. Mr. Norman Peter Hainley, in opening the sale, said though for the moment the china clay industry was under a cloud there was every reason to hope that the trade would return to its former prosperity. There was a large attendance but no bid was made.

LOOE (CORNWALL) HARBOUR COMMISSIONERS, following the receipt of an application from a Manchester firm for a reduction of the harbour dues on china clay exported from the port, resolved to comply with the request, but before fixing the amount of the decreased dues to ascertain what other Cornish ports are charging. The Commissioners agreed that if lowering the dues resulted in the export of only a few hundred tons more china clay from Looe it would be of advantage to the locality from the employment point of view.

Artificial Silk

GERMANY'S FOREIGN TRADE IN RAYON shows a favourable development during recent months. The rayon yarn imports, which during the first quarter of the current year averaged 928 tons monthly, dropped to 655 tons in August, 20 per cent. lower than in August last year. Exports in August, however, totalled 653 tons, an increase of 73 per cent. over August, 1931.

Paper Making

MORE SETTLED CONDITIONS have prevailed in the British paper market during the past month. In spite of the holiday season, general business has been much more brisk, publishing orders have shown a welcome increase, and papers for advertising and catalogue work have been in demand earlier than is usual. British newsprint mills had an anxious time during the upheaval which resulted from the establishment of tariff duties, and the period of readjustment required to meet the changed order. The mills, however, made very substantial reductions in the price of newsprint to domestic consumers, in order to meet the keen competition encountered from the Scandinavian mills, and have been able to retain a large part of the home market.

Sugar

AN ADVANCE of £700,000 to the Polish sugar beet industry on this year's production has been made through the British Overseas Bank at Warsaw. The money will be of considerable assistance to Polish agriculture.

DUTCH EAST INDIES SUGAR INTERESTS are to be brought within one organisation to be controlled by the Government, according to a proposal which has been put forward at the conference which is taking place at Batavia between Government officials and representatives of the producers.

THE INTERNATIONAL SUGAR CONFERENCE has issued invitations to the sugar-producing countries which adhered to the Chadbourn plan to attend a meeting of the conference in Brussels on October 3. The purpose of the meeting is to hear the views of the Cuban producers on the decisions taken by the Ostend Conference in July. The attitude of the Cuban producers has been in doubt. Their delegation did not approve the Ostend decisions, which were supported by the European, Javan, and Peruvian producers, and objections to the agreement still exist in certain Cuban circles.

Rubber

A SYNTHETIC RUBBER PLANT has begun working at Voronej in Soviet Russia. The rubber is made from alcohol, as the starting point in the synthesis. The first batch of synthetic rubber inner tubes for motor car tyres has already been made, and the Tass Agency reports that tests have shown that their quality is in no way lower than that of inner tubes and tyres made of real rubber. The new plant is the second of its kind. Another is to be opened almost immediately, and three more will follow next year.

DELIVERIES OF RUBBER from the warehouses during the past week were somewhat heavier than expected, stocks held in this country having fallen by 1,214 tons. This compares with the forecast of about 1,000 tons. In London a decline of 1,190 tons was reported, the total stocks now amounting to 44,986 tons, while the holding in Liverpool was reduced by 24 tons to 58,004 tons. The combined holding thus has fallen to 102,990 tons, which compares with 134,834 tons held at this time last year. These figures created a favourable impression in the commodity market, where the price was raised sharply to 2 25-32d. per lb.

Magnesite Deposits in Russia

LARGE deposits of magnesite, hitherto unknown in the Far Eastern Province, have been discovered in Birobidjan by an expedition sent out by the Far Eastern Geological Trust with Professor Pavlov at the head. The magnesite was found six kilometres from the Biarkan station on the Ussuri railway. The thickness of the layer is about four metres. Provisional analysis showed 42 per cent. pure magnesite.

Weekly Prices of British Chemical Products

Review of Current Market Conditions

The following notes on the chemical market conditions in Great Britain are based on direct information supplied by the British manufacturers concerned, and unless otherwise qualified the figures quoted apply to fair quantities, net and naked at makers' works. Where no locality is indicated, the prices are general for the United Kingdom. Particulars of the London chemical market are specially supplied to THE CHEMICAL AGE by R. W. Greeff and Co., Ltd., and Chas. Page and Co., Ltd., and those of the Scottish chemical market by Chas. Tennant and Co., Ltd.

THERE has been a steady demand for most products in the London chemical market this week, with prices remaining very firm. The coal tar products market is unchanged from last week, prices remaining the same, with stocks still short. The settlement of the Lancashire cotton strike has been welcome news on the Manchester chemical market and if the spurt in cotton textile business, which is expected to result in consequence of the reduced production costs materialises, the demand for many lines of chemicals should improve. Sales of the latter this week have been on a moderate scale though the bulk of the business continues to be for relatively early delivery. The few slight changes in prices that have occurred during the past week have been towards lower levels, but the general tone of the market is undoubtedly steady. There has been no material change in the Scottish market during the week, business being fairly steady and prices generally remaining unchanged.

General Chemicals

ACETONE.—LONDON: £6s. to £6s. per ton; SCOTLAND: £6s to £6s. ex wharf, according to quantity.
 ACID, ACETIC.—Tech. 80%, £37 5s. to £39 5s.; pure 80% £38 5s. to £40 5s.; tech., 40%, £19 15s. to £21 15s.; tech., 60%, £28 10s. to £30 10s. SCOTLAND: Glacial 98/100%, £48 to £50; pure 80%, £38 5s.; tech. 80%, £37 5s. d/d buyers' premises Great Britain. MANCHESTER: 80%, commercial, £39; tech. glacial, £52.
 ACID, BORIC.—SCOTLAND: Granulated commercial, £26 10s. per ton; B.P. crystals, £35 10s.; B.P. powder, £36 10s. in 1-cwt. bags d/d free Great Britain in one-ton lots upwards.
 ACID, CHROMIC.—11d. per lb., less 21%, d/d U.K.
 ACID, CITRIC.—1s. 6d. per lb. LONDON: 11d. less 5%. MANCHESTER: 10d.
 ACID, CRESYLIC.—97/99%, 1s. 5d. to 1s. 7d. per gal.; 99/100%, 1s. 9d. to 2s.
 ACID FORMIC.—London: £48 per ton.
 ACID, HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d according to purity, strength and locality. SCOTLAND: Arsenical quality, 4s.; dearsenicated, 5s. ex works, full wagon loads.
 ACID, LACTIC.—LANCASHIRE: Dark tech., 50% by vol., £24 10s per ton; 50% by weight, £28 10s.; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £53; edible, 50% by vol., £41. One-ton lots ex works, barrels free.
 ACID, NITRIC.—80° Tw. spot, £220 to £25 per ton makers' works, according to district and quality. SCOTLAND: 80°, £23 ex station full truck loads.
 ACID, OXALIC.—LONDON: £45 10s. per ton in casks, £48 10s. to £52 10s. in kegs. SCOTLAND: 98/100%, £49 to £52 ex store. MANCHESTER: £46, ex store.
 ACID, SULPHURIC.—Average prices f.o.r. British makers' works, with slight variations owing to local considerations: 140° Tw. crude acid, £3 per ton; 168° Tw. arsenical £5 10s.; 168° Tw. non-arsenical, £6 15s. SCOTLAND: 144° quality, £3 12s. 6d.; 168°, £7; dearsenicated, 20s. per ton extra.
 ACID, TARTARIC.—11d. per lb. SCOTLAND: B.P. crystals, 11d. to 1s., less 5%, carriage paid. MANCHESTER: 10d. to 11d.
 ALUM.—SCOTLAND: Lump potash, £9 per ton ex store.
 ALUMINA SULPHATE.—LONDON: £8 5s. to £9 10s. per ton. SCOTLAND: £8 to £8 10s. ex store.
 AMMONIA, ANHYDROUS.—Spot, 10d. per lb. d/d in cylinders. SCOTLAND: 10d. to 1s. containers extra and returnable.
 AMMONIA LIQUID.—SCOTLAND: 80°, 2d. to 3d. per lb. d/d.
 AMMONIUM BICHROMATE.—8d. per lb. d/d U.K.
 AMMONIUM CARBONATE.—SCOTLAND: Lump, £36 per ton; powdered, £38, in 5-cwt. casks d/d U.K. stations or f.o.r. U.K. ports.
 AMMONIUM CHLORIDE.—£37 to £45 per ton, carriage paid. LONDON: Fine white crystals, £19 to £20. (See also Salammoniac.)
 AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton carriage paid according to quantity. (See also Salammoniac.)
 ANTIMONY OXIDE.—SCOTLAND: Spot, £22 per ton, c.i.f. U.K. ports.
 ANTIMONY SULPHIDE.—Golden 6d. to 1s. 1d. per lb.; crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC.—LONDON: £24 10s. c.i.f. main U.K. ports for imported material; Cornish, nominal, £26 f.o.r. mines. SCOTLAND: White powdered £27 ex wharf; spot, £27 10s. ex store. MANCHESTER: White powdered Cornish, £25 10s. at mines.
 ARSENIC SULPHIDE.—Yellow 1s. 6d. to 1s. 8d. per lb.
 BARIUM CHLORIDE.—£11 per ton.
 BISULPHITE OF LIME.—£7 10s. per ton f.o.r. London, packages free.
 BLEACHING POWDER.—Spot 35/37% £7 19s. per ton d/d station in casks, special terms for contract. SCOTLAND: £8 15s. in 5/6 cwt. casks.

BORAX, COMMERCIAL.—Granulated £15 10s. per ton, power £17, packed in 1-cwt. bags, carriage paid any station Great Britain. Prices are for 1-ton lots and upwards.

CADMIUM SULPHIDE.—3s. 4d. to 3s. 7d. per lb.

CALCIUM CHLORIDE.—Solid 70/75% spot £5 5s. to £5 15s. per ton d/d station in drums.

CARBON BISULPHIDE.—£30 to £32 per ton, drums extra.

CARBON BLACK.—4d. to 5d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £55 per ton, drums extra.

CHROMIUM OXIDE.—10d. to 10d. per lb., according to quantity d/d U.K. Green 1s. 2d. per lb.

CHROMETAN.—Crystals 3d. per lb. Liquor £19 10s. per ton d/d.

COPPERS (GREEN).—SCOTLAND: £3 15s. per ton, f.o.r. or ex works.

CREAM OF TARTAR.—LONDON: £4 5s. per cwt.

FORMALDEHYDE.—LONDON: £28 per ton. SCOTLAND: 40%, £28 ex store.

LAMPBLACK.—£46 to £50 per ton.

LEAD ACETATE.—LONDON: White, £34 per ton. Brown, £1 per ton less. SCOTLAND: White Crystals £40 to £41 c.i.f. U.K. ports. Brown, £1 per ton less. MANCHESTER: White, £32 10s.; Brown, £31.

LEAD NITRATE.—£28 per ton. MANCHESTER: £28.

LEAD, RED.—SCOTLAND: £28 10s. per ton d/d buyer's works.

LEAD, WHITE.—SCOTLAND: £40 per ton carriage paid.

LITHOPONE.—30%, £19 to £21 per ton.

MAGNESITE.—SCOTLAND: Ground Calcined £9 per ton ex store.

METHYLATED SPIRIT.—61 O.P. Industrial 1s. 8d. to 2s. 3d. gal. Pyridinised Industrial, 1s. 10d. to 2s. 5d. Mineralised, 2s. 9d. to 3s. 3d. 64 O.P. id. extra in all cases. Prices according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 9d. to 2s. 4d.

NICKEL AMMONIUM SULPHATE.—£52 per ton d/d.

NICKEL SULPHATE.—£52 per ton d/d.

PHENOL.—Small lots 6d. to 6d. per lb. in 3-cwt. drums, bulk quantities down to 5d. per lb., delivery free U.K.

POTASH, CAUSTIC.—LONDON: £42. MANCHESTER: £40.

POTASSIUM BICHROMATE.—Crystals and Granular, 5d. per lb. net d/d U.K. Discount according to quantity. Ground 5d. LONDON: 5d. per lb. with usual discounts for contracts. SCOTLAND: 5d. d/d U.K. or c.i.f. Irish Ports. MANCHESTER: 5d.

POTASSIUM CARBONATE.—SCOTLAND: 96/98% spot £28 per ton ex store. LONDON: £31 10s. to £32. MANCHESTER: £29 to £30.

POTASSIUM CHLORATE.—3d. per lb. ex wharf London in 1-cwt. kegs. LONDON: £37 to £40 per ton. SCOTLAND: 99/100% powder, £34. MANCHESTER: £36.

POTASSIUM CHROMATE.—6d. per lb. d/d U.K.

POTASSIUM NITRATE.—SCOTLAND: Refined Granulated £29 per ton c.i.f. U.K. ports. Spot £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 8d. per lb. SCOTLAND: B.P. crystals, 8d. MANCHESTER: Commercial, 8d.; B.P., 8d.

POTASSIUM PRUSSIATE.—LONDON: 8d. to 9d. per lb. SCOTLAND: Yellow spot material, 8d. ex store. MANCHESTER: Yellow, 8d.

SALAMMONIAC.—First lump spot, £42 17s. 6d. per ton d/d in barrels.

SODA ASH.—58% spot, £6 per ton f.o.r. in bags, special terms for contracts.

SODA, CAUSTIC.—Solid 76/77% spot, £14 10s. per ton d/d station.

SCOTLAND: Powdered 68/99%, £17 10s. in drums £18 15s. in casks. Solid 76/77% £14 10s. in drums 70/72% £14 12s. 6d., carriage paid buyer's station, minimum 4-ton lots; contracts 10s. per ton less. MANCHESTER: £12 15s. to £14 10s. contracts.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£21 to £22 per ton.

SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d in bags. SCOTLAND: Refined recrystallised £10 10s. ex quay or station. MANCHESTER: £10 10s.

SODIUM BICHROMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount according to quantity. Anhydrous 5d. per lb. LONDON: 4d. per lb. with discounts for quantities. SCOTLAND: 4d. delivered buyer's premises with concession for contracts. MANCHESTER: 4d. less 1 to 3 1/2% contracts, 4d. spot lots.

SODIUM BISULPHITE POWDER.—60/62%, £16 10s. per ton d/d/ 1-cwt. iron drums for home trade.

SODIUM CARBONATE (SODA CRYSTALS).—SCOTLAND: £5 to £5 5s. per ton ex quay or station. Powdered or peat quality 7s. 6d. per ton extra. Light Soda Ash £7 ex quay, min. 4-ton lots with reductions for contracts.

SODIUM CHLORATE.—£29 per ton.

SODIUM CHROMATE.—3d. per lb. d/d U.K.

SODIUM HYPOSULPHITE. SCOTLAND: Large crystals English manufacture, £9 5s. per ton ex stations, min. 4-ton lots. Pea crystals £15 ex station 4-ton lots. MANCHESTER: Commercial, £9 5s.; photographic, £15.

SODIUM NITRITE.—Spot, £19 to £22 per ton d/d station in drums.

SODIUM PERBORATE.—LONDON: 10d. per lb.

SODIUM PHOSPHATE.—£13 to £15 per ton.

SODIUM PRUSSIATE.—LONDON: 5d. to 5½d. per lb. SCOTLAND: 5d. to 5½d. ex store. MANCHESTER: 5d. to 6d.

SODIUM SILICATE.—140° Tw. Spot £8 5s. per ton d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—£4 2s. 6d. per ton d/d. SCOTLAND: English material £3 15s.

SODIUM SULPHATE (SALT CAKE).—Unground Spot £3 15s. per ton d/d station in bulk. SCOTLAND: Ground quality, £3 5s. per ton d/d. MANCHESTER: £3 2s. 6d.

SODIUM SULPHIDE.—Solid 60/62% Spot, £10 15s. per ton d/d in drums. Crystals Spot £7 15s. per ton d/d in casks. SCOTLAND: For home consumption, Solid 60/62%, £10 5s.; broken 60/62%, £11 5s.; crystals, 30/32%, £8 2s. 6d. d/d buyer's works on contract, min. 4-ton lots. Spot solid 5s. per ton extra. Crystals, 2s. 6d. per ton extra. MANCHESTER: Concentrated solid, 60/62%, £11 10s.; commercial, £8.

SODIUM SULPHITE.—Pea crystals spot, £13 10s. per ton d/d station in kegs. Commercial spot £9 10s. d/d station in bags.

SULPHATE OF COPPER.—MANCHESTER: £16 10s. to £17 per ton f.o.b. SULPHUR.—£12 per ton. SCOTLAND: Flowers, £12 10s.; roll, £12; rock, £9. Ground American, £12 ex store.

SULPHUR CHLORIDE.—5d. to 7d. per lb., according to quality.

SULPHUR PRECIP.—B.P. £55 to £60 per ton according to quantity. Commercial, £5 to £55.

VERMILION.—Pale or deep, 4s. 6d. to 4s. 11d. per lb.

ZINC CHLORIDE.—SCOTLAND: British material, 98%, £18 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—LONDON and SCOTLAND: £12 per ton.

ZINC SULPHIDE.—1s. to 1s. 2d. per lb.

Pharmaceutical and Fine Chemicals

ACID, TARTARIC.—10½d. per lb.

BISMUTH SALTS.—Carbonate, 6s. 6d. per lb.; citrate, 8s. 10d.; nitrate (cryst.), 4s. 4d.; oxide, 10s.; salicylate, 7s. 3d.; subchloride, 9s. 10d.; subgallate, 6s. 11d.; subnitrate, 5s. 8d.

PHENOLPHTHALEIN.—4s. to 5s. per lb.

POTASSIUM BITARTRATE.—99/100% (Cream of Tartar).—£4 5s. per cwt.

SODIUM BENZOATE. B.P.—1s. 7d. per lb.

SODIUM CITRATE. B.P.C. 1911.—1s. 3d. per lb.; B.P.C. 1923 and U.S.P., 1s. 7d. per lb.

VANILLIN.—Ex clove oil, 16s. to 18s. per lb. Ex Guaiacol, 14s. 3d. to 16s. 3d. per lb., including packing and delivery free U.K.

Essential Oils

ALMOND, FOREIGN, S.P.A.—11s. 6d. per lb.

ANISE.—2s. per lb.

BERGAMOT.—10s. 6d. per lb.

BOURBON GERANIUM.—25s. per lb.

CAMPHOR, WHITE.—£4 15s. per cwt.

CITRONELLA OIL, JAVA.—3s. 3d. per lb. CEYLON: 2s. 4d. per lb.

LEMON.—6s. per lb.

LEMONGRASS.—2s. 6d. per lb.

PEPPERMINT, JAPANESE.—4s. 3d. per lb. WAYNE COUNTY: 12s. per lb.

PETITGRAIN.—5s. 6d. per lb.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID, BENZOIC, B.P. (ex Toluol).—1s. 9½d. per lb.

ACID, GAMMA.—Spot, 4s. per lb. 100% d/d buyer's works.

ACID, H.—Spot, 2s. 4½d. per lb. 100% d/d buyer's works.

ACID, NEVILLE AND WINTHROP.—Spot, 3s. per lb. 100% d/d buyer's works.

ACID, SULPHANILIC.—Spot, 8d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra.

BENZIDINE BASE.—Spot, 2s. 5d. per lb. 100% d/d buyer's works.

o-CRESOL. 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.

m-CRESOL. 98/100%.—2s. 3d. per lb., in ton lots.

p-CRESOL. 34.5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—2s. per lb.

DIMETHYLANILINE.—Spot, 1s. 6d. per lb., package extra.

DINITROBENZENE.—8½d. per lb.

DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C., 9d. per lb.

DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works.

α-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.

β-NAPHTHOL.—Spot, £75 per ton in 1-ton lots, d/d buyer's works.

α-NAPHTHYLAMINE.—Spot, 11½d. per lb., d/d buyer's works.

β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 10d. per lb.

m-NITRANILINE.—Spot, 2s. 7d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 5d. per lb.; 5-cwt. lots, drums extra.

NITRONAPHTHALENE.—9d. per lb.

SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb.

o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 11d. per lb., d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 6d. per lb., 100%.

Coal Tar Products

ACID, CARBOLIC (CRYSTALS).—5½d. to 6½d. per lb. Crude, 60's is. 5½d. to 1s. 6d. per gal. 2% water, 1s. 9d. per gal. SCOTLAND: Sixties, 1s. 7d. to 1s. 8d.

ACID, CRESYLIC.—99/100, 1s. 9d. per gal.; B.P., 1s. 10d. to 2s.; Refined, 1s. 8d. to 1s. 10d.; Pale, 98%, 1s. 6d. to 1s. 7d.; Dark, 1s. 3d. to 1s. 4d. LONDON: 98/100%, 1s. 6d. Dark 95/97%, 1s. 4d. SCOTLAND: Pale 99/100%, 1s. 3d. to 1s. 4d.; 97/99%, 1s. to 1s. 1d.; dark 97/99%, 11d. to 1s.; high boiling acid, 2s. 6d. to 3s.

ANTHACENE OIL.—Strained, 4½d. per gal.

BENZOL.—At works, crude, 10d. to 11d. per gal.; standard motor, 1s. 6d. to 1s. 7d.; 90%, 1s. 7d. to 1s. 8d.; pure, 1s. 10d. to 1s. 11d. LONDON: Motor, 1s. 7d. SCOTLAND: Motor, 1s. 6d. to 1s. 7d.; 90%, 2s. 6d. to 2s. 11d.

CREOSOTE.—Standard for export, 4½d. to 5d. nett per gal. f.o.b. for Home, 3½d. d/d. LONDON: 3d. to 3½d. f.o.r. North; 4d. to 4½d. London. MANCHESTER: 3d. to 4d. SCOTLAND: Specification oils, 3½d. to 4½d.; washed oil, 4d. to 4½d.; light, 3½d. to 4½d.; heavy, 4½d. to 5d.

NAPHTHA.—Solvent, 90/160, 1s. 4d. to 1s. 5d. per gal.; 95/160, 1s. 8d.; 90/190, 1s. 1d. to 1s. 2d. LONDON: Solvent, 1s. 3½d. to 1s. 4d.; heavy, 11d. to 1s. 6d. f.o.r. SCOTLAND: 90/160, 1s. 3d. to 1s. 3½d.; 90/190, 11d. to 1s. 2d.

NAPHTHALENE.—Crude, Hot-Pressed, £6 1s. 3d. per ton. Flaker, £10 per ton. Purified crystals, £9 10s. per ton in bags. LONDON: Fire lighter quality, £3 to £3 10s.; 74/76 quality, £4 to £4 10s.; 76/78 quality, £5 10s. to £6. SCOTLAND: 40s. to 50s.; whizzed, 65s. to 70s.

PITCH.—Medium soft, £4 7s. 6d. to £5 per ton.

PYRIDINE.—90/140, 3s. 9d. per gal.; 90/160, 4s. to 4s. 6d.; 90/180, 2s. to 2s. 6d. SCOTLAND: 90/160%, 4s. to 5s.; 90/220%, 3s. to 4s.

REFINED COAL TAR.—SCOTLAND: 4½d. to 5d. per gal.

X 575.—1s. 9d. to 2s. per gal.; Pure, 1s. 10d. to 2s. 2d.

TOLUOLE.—90%.—2s. to 2s. 4d. per gal.; Pure, 2s. 6d. to 2s. 8d. per gal.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8 10s. per ton. Grey, £10 10s. to £12. Liquor, brown, 30° Tw., 6d. per gal. MANCHESTER: Brown, £8 10s.; grey, £11 5s.

ACETIC ACID, TECHNICAL, 40%.—£16 10s. to £18 10s. per ton.

AMYL ACETATE, TECHNICAL.—95s. to 110s. per cwt.

CHARCOAL.—£6 10s. to £11 per ton.

WOOD CREOSOTE, MISCELLY.—2s. to 4s. per gal. Solvent, 3s. 9d. to 4s. 9d. per gal.

WOOD TAR.—£2 to £6 per ton.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—The export market remains quiet, but the price is firmly held at £4 12s. 6d. per ton f.o.b. U.K. port in single bags for October shipment. As this is the off season there is very little interest in the home market. The price continues unchanged at £5 5s. per ton delivered in 6-ton lots to farmers' nearest station.

NITRATE OF SODA.—The price remains unchanged at £8 9s. per ton for October delivery, for 6-ton lots delivered to consumers' nearest station.

NITRO-CHALK.—The price of £7 5s. per ton delivered in 6-ton lots remains in force. It is reported that there has been some buying for spring delivery.

Latest Oil Prices

LONDON, September 28.—**LINSEED OIL** was firmer. Spot, small quantities, £20; Oct., £16 17s. 6d.; Nov.-Dec., £17 7s. 6d.; Jan.-April, £17 15s.; May-Aug., £18 17s. 6d.; naked. **RAPE OIL** was quiet. Crude, extracted, £20; technical refined, £31, naked, ex wharf. **COTTON OIL** was slow. Egyptian crude, £23 10s.; refined common edible, £26 10s.; deodorised, £28 10s.; naked, ex mill. **TURPENTINE** was steady. American, 63s. 6d. per cwt.

HULL.—**LINSEED OIL**, spot, closed at £16 10s.; Sept., £16; Oct.-Dec., £16 5s.; Jan.-April, £17; and May-Aug., £18 per ton.

COTTON OIL, Egyptian, crude, spot, £23 10s.; edible, refined spot, £26; technical, spot, £26; deodorised, £27, naked. **PALM KERNEL OIL**, crude, f.m.q., spot, £22 10s., naked. **GROUNDNUT OIL**, crushed-extracted, spot, £31 10s.; deodorised, £35 10s. **RAPE OIL**, crushed-extracted, spot, £28 10s.; refined, £30. **SOYA OIL**, crushed-extracted, spot, £23 10s.; deodorised, £26 10s. per ton. **COD OIL**, 15s. 6d. per cwt. **CASTOR OIL**, pharmacy, spot, 42s.; first, 37s.; second, 32s. per cwt. **TURPENTINE**, American, spot, 65s. per cwt.

Inventions in the Chemical Industry

Specifications Accepted and Applications for Patents

The following information is prepared from the Official Patents Journal. Printed copies of Specifications Accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Specifications Accepted with Dates of Applications

MANUFACTURE AND PRODUCTION OF ASSISTANTS IN THE TEXTILE AND RELATED INDUSTRIES AND DISPERSING AGENTS. J. Y. Johnson (*I. G. Farbenindustrie*). April 10, 1931. 380,431.

PROCESS FOR RECOVERING METALS, SUCH AS TIN, LEAD, ANTIMONY, AND BISMUTH, OR ALLOYS THEREOF, FROM SUBSTANCES WHICH CONTAIN SAME AND WHICH MAY ALSO CONTAIN MORE VOLATILE METALS SUCH AS ARSENIC, CADMIUM AND ZINC. *Boetzelius Metallhütten-Ges.* June 24, 1930. 380,493.

TREATMENT OF CRUDE BENZOL. *Concordia Bergbau Akt.-Ges.*, R. Schneider and L. Nettlenbusch. June 12, 1931. 380,495.

CATALYTIC AGENTS. *Silica Gel Corporation*. June 17, 1930. 380,480.

REMOVAL OF SULPHUR DIOXIDE FROM GASES. *London Power Co., Ltd.*, S. L. Pearce and C. F. Goodeve. June 19, 1931. 380,513.

MANUFACTURE OF 6-BROMO-2-HYDROXYNAPHTHALENE AND 4:6-DIBROMO-2-HYDROXYNAPHTHALENE. W. W. Groves (*I. G. Farbenindustrie*). Aug. 10, 1931. 380,503.

CONVERSION BY DESTRUCTIVE HYDROGENATION OF SOLID CARBONACEOUS MATERIALS INTO VALUABLE LIQUID PRODUCTS, ESPECIALLY BENZENES. J. Y. Johnson (*I. G. Farbenindustrie*). Oct. 5, 1931. 380,015.

MAGNESIUM BASE ALLOYS. *American Magnesium Corporation*. Aug. 6, 1931. 380,669.

TREATMENT OF AMMONIACAL GAS LIQUOR AND OTHER LIQUIDS CONTAINING TAR ACIDS. *Koppers Co. of Delaware*. Jan. 31, 1931. 380,699.

LIGHT-SENSITIVE SILVER HALIDE EMULSIONS. *I. G. Farbenindustrie*. Feb. 3, 1931. 380,702.

PROCESS FOR THE MANUFACTURE OF AQUEOUS DISPERSIONS OF RUBBER. *Flintkote Corporation*. Feb. 4, 1931. 380,703.

SEPARATION OF UNSAPONIFIABLE MATTER FROM FATTY ACID MATERIALS. *I. G. Farbenindustrie*. April 18, 1931. 380,707.

Complete Specifications open to Public Inspection

MANUFACTURE AND PRODUCTION OF DELUSTERED CELLULOSE ACETATE YARN. *Viscose Co.* Sept. 16, 1931. 15708/32.

PROCESS FOR THE MANUFACTURE OF ANTRACHITICALLY HIGHLY-ACTIVE IRRADIATED PRODUCTS OF ERGOSTEROL. *I. G. Farbenindustrie*. Sept. 18, 1932. 21785/32.

MANUFACTURE AND PRODUCTION OF STABLE REDUCTION PRODUCTS OF DYESTUFFS OF THE INDIGO SERIES. *I. G. Farbenindustrie*. Sept. 18, 1931. 24511/32.

PROCESS FOR THE SIMULTANEOUS PRODUCTION FROM METHANE OF HYDROGEN, LAMP BLACK, AND LIGHT LIQUID HYDROCARBONS. Dr. C. Padovani. Sept. 19, 1931. 25344/32.

CASEIN PRODUCTS AND PROCESS FOR THEIR MANUFACTURE. F. F. Schwartz. Sept. 19, 1931. 25488/32.

MANUFACTURE OF SOAP FOR USE IN DRY CLEANING. *Koessler and Haaslächer Chemical Co.* Sept. 18, 1931. 25677/32.

MANUFACTURE OF AZO DYES. E. I. Du Pont de Nemours and Co. Sept. 19, 1931. 25079/32.

MANUFACTURE OF CELLULOSE ACETATE. *Kodak, Ltd.* Sept. 16, 1931. 25997/32.

PROCESS FOR PROTECTING WOOL, FUR, HAIR, FEATHERS, AND THE LIKE AGAINST ATTACK BY MOTH. *I. G. Farbenindustrie*. Sept. 16, 1931. 25722/32.

MANUFACTURE OF OPTICALLY ACTIVE 1-PHENYL-2-AMINOPROPANOLS (1). *I. G. Farbenindustrie*. Sept. 19, 1931. 26008/32.

MANUFACTURE OF SENSITISED SILVER HALIDE EMULSIONS, AND OF DYES THEREFOR. *I. G. Farbenindustrie*. Sept. 19, 1931. 26009/32.

MANUFACTURE OF PRODUCTS SUITABLE FOR USE AS WASHING, WETTING-OUT, EMULSIFYING, DISPERSING, PEPTISING, FOAMING, CLEANSING, AND LIKE AGENTS. *Deutsche Hydrierwerke Akt.-Ges.* Sept. 17, 1931. 26054/32.

Applications for Patents

MANUFACTURE OF BASIC LEAD ANTIMONATES. M. Ragg and F. Rahtjen. Sept. 13. (March 16, '31.) 25460.

REFINING ANIMAL AND VEGETABLE OILS, ETC. *Robinson Bindley Processes, Ltd.* Sept. 15. 25673.

MANUFACTURE OF 2- AND 4-HYDROXY-3-5-DIHYDOPYRIDINE-MONOCARBOXYLIC ACIDS. *Schering-Kahlbaum Akt.-Ges.* Sept. 16. (Germany, Sept. 22, '31.) 25829.

ELECTRODEPOSITION OF METALS. G. E. Adey. Sept. 21. 26238.

POLYHYDROIC ALCOHOL-POLYBASIC ACID RESINS. *American Cyanamid Co.*, and T. F. Bradley. Sept. 24. 26603, 26605.

DRYING OIL COMPOSITIONS, AND IMPROVED POLYHYDROIC ALCOHOL-POLYBASIC ACID RESINS PREPARED THEREWITH. *American Cyanamid Co.*, and T. F. Bradley. Sept. 24. 26604.

MANUFACTURE OF ARTIFICIAL RESIN. L. d'Antal. Sept. 23. (Germany, Oct. 3, '31.) 26401.

MANUFACTURE OF CONDENSATION PRODUCTS FROM NATURAL RESINS. A. Carpmael (*I. G. Farbenindustrie*). Sept. 20. 26143.

RECOVERY OF SULPHUR-DIOXIDE FROM GAS MIXTURES. A. M. Clark and Imperial Chemical Industries, Ltd. Sept. 21. 26294.

EXTRACTING DUST FROM AIR, ETC. *Drysdale and Co., Ltd.*, and J. Young. Sept. 22. 26337.

MANUFACTURE OF PHOSPHORIC ACID FROM INSOLUBLE CALCIUM PHOSPHATE. J. P. Fraser. Sept. 24. 26529.

MANUFACTURE OF IMPROVED HYDROCARBON PRODUCTS FROM TECHNICAL PETROLEUM STOCKS. *Gulf Refining Co.* Sept. 20. (United States, March 10.) 26158.

PROCESS FOR DISSOLVING VULCANISED RUBBER. P. H. Head. Sept. 21. 26277.

DISSOLVING SULPHUR. P. H. Head. Sept. 21. 26287.

MANUFACTURE OF ALCOHOLS. *Henkel et Cie Ges.* Sept. 23. (Germany, Nov. 14, '31.) 26427.

PRODUCTION OF SOLID CARBON DIOXIDE, ETC. W. Hessling. Sept. 22. (Germany, Sept. 22, '31.) 26422.

COLOURING FOODSTUFFS. F. Hill and Imperial Chemical Industries, Ltd. Sept. 21. 26186.

HYDROGENATION OF CRESOLS OF CRESYLIC ACID. R. Holroyd, and Imperial Chemical Industries, Ltd. Sept. 16. 26035.

REFINING NATURAL ORGANIC PRODUCTS. W. J. Hund and L. Rosensteïn. Sept. 20. (United States, Sept. 22, '31.) 26183.

DEHYDROGENATION OF HYDROCARBONS. J. Y. Johnson (*I. G. Farbenindustrie*). Sept. 22. 26390.

MANUFACTURE OF VAT DYESTUFFS OF THE FLAVANTHRONE SERIES. J. Y. Johnson (*I. G. Farbenindustrie*). Sept. 22. 26391.

MANUFACTURE OF PRIMARY DISAZO DYESTUFFS. J. Y. Johnson (*I. G. Farbenindustrie*). Sept. 23. 26494.

MANUFACTURE OF OPTICALLY-ACTIVE 1-PHENYL-2-AMINO-PROPANOLS (1). *I. G. Farbenindustrie*. Sept. 19. (Germany, Sept. 19, '31.) 26008.

MANUFACTURE OF SENSITISED SILVER HALIDE EMULSIONS AND DYES THEREFOR. *I. G. Farbenindustrie*. Sept. 19. (Germany, Sept. 19, '31.) 26009.

MANUFACTURE OF DISAZO DYESTUFFS CONTAINING COPPER. *I. G. Farbenindustrie*. Sept. 20. (Germany, Sept. 21, '31.) 26141.

MANUFACTURE OF DERIVATIVES OF THE BARBITURIC ACID SERIES. *I. G. Farbenindustrie*. Sept. 20. (Germany, Dec. 31, '31.) 26142.

MANUFACTURE OF SULPHURIC ACID ESTERS OF LEUCO DERIVATIVES OF VAT DYESTUFFS. *I. G. Farbenindustrie*. Sept. 21. (Germany, Sept. 21, '31.) 26257.

MANUFACTURE OF ACYLACETIC HYDROXYARYLAMIDES. *I. G. Farbenindustrie*. Sept. 22. (Germany, Sept. 23, '31.) 26384.

PROCESS FOR DESTRUCTIVE HYDROGENATION OF DISTILLABLE CARBOXYLIC ACIDS. International Hydrogenation Patents Co., and H. E. Potts. Sept. 24. 26554.

CATALYSTS. J. G. King and M. A. Matthews. Sept. 19. 25975.

MANUFACTURE OF CARBOVANANINE DYES, ETC. *Kodak, Ltd.* Sept. 21. (United States, Sept. 21, '31.) 26261.

TREATMENT OF HYDROCARBONS. O. D. Lusac and E. J. Lush. Sept. 20. 26072, 26075, 26076, 26077.

MANUFACTURE OF VISCOUS OIL BY CONDENSATION OF CRACKING PRODUCTS. *Naamloze Vennootschap De Bataafsche Petroleum Maatschappij*. Sept. 23. (Holland, Nov. 16, '31.) 26475.

METHODS OF THICKENING LATEX. *Naugatuck Chemical Co.* Sept. 22. (United States, Oct. 8, '31.) 26373.

Books Received

The Structure of Molecules. By P. Debye. London: Blackie and Son, Ltd. Pp. 190. 15s.

Transactions of the Institution of Chemical Engineers. Vol. 9, 1931. London: Institution of Chemical Engineers. Pp. 212.

Unit Processes and Principles of Chemical Engineering. By John C. Olsen. London: Macmillan & Co., Ltd. Pp. 558. 25s.

Lithium. Imperial Institute. London: H.M. Stationery Office. Pp. 27. 6d.

The Terpenes. Vol. II. By J. L. Simonsen. Cambridge: The University Press. Pp. 628. 35s.

Chapters in Modern Inorganic and Theoretical Chemistry. By Ernest S. Hedges. London: Edward Arnold & Co. Pp. 280. 12s. 6d.

International Handbook of the By-Product Coking Industry. By Professor Dr. W. Gluud. English Edition by E. M. Myers. London: Ernest Benn, Ltd. Halle (Saale): Wilhelm Knapp. Pp. 880. £4 4s.

Economic Conditions in Roumania in 1931 (May, 1932). Report by R. J. E. Humphreys. Department of Overseas Trade. London: H.M. Stationery Office. Pp. 86. 2s. 6d.

From Week to Week

BRITISH SUMMER TIME ends at 2 a.m. on Sunday. All clocks should be put back one hour to-night (Saturday).

THE IMPERIAL SMELTING CORPORATION, LTD., states that Mr. C. L. Baillieu has been appointed a director in place of the Hon. W. L. Baillieu, who has resigned owing to ill-health.

THE OPENING MEETING of the Institution of Chemical Engineers for the session will be held on Friday, October 7, in the rooms of the Chemical Society, Burlington House, W.1, when a paper entitled "Fluid Friction and its Relation to Heat Transfer," will be read by Dr. C. M. White, of King's College, London. The chair will be taken at 6 p.m. by Mr. J. Arthur Reavell (past president).

A SPECIAL MEETING of the Institution of Petroleum Technologists will be held at the Royal Institution of Great Britain, 21 Albemarle Street, W.1, at 3 p.m., on October 7, when Dr. Lazar Edeleanu, the Roumanian petroleum chemist, will be presented with the Redwood medal, the highest award of the Institution. Dr. Edeleanu will then deliver an address on "The History of the Edeleanu Process." Dr. Edeleanu is the first recipient of the Redwood medal under the new rules by which it may be conferred on any petroleum technologist of great eminence irrespective of nationality and membership of the Institution. Visitors will be welcome at this special meeting.

UNDER THE IMPORT DUTIES ACT, 1932, the Import Duties Advisory Committee had no power to recommend the removal of any goods from the Free List, but this power was recently conferred upon it under Section 7 of the Finance Act, 1932. The committee proposes to consider the exercise of this power in connection with an application for the removal of peroxide of manganese (ground or granulated) from the free list and the imposition of an additional duty upon it. The committee also has under consideration the addition of tantalum metal to the free list. Representations in regard to these applications should be addressed in writing to the Secretary, Import Duties Advisory Committee, Caxton House (West Block), Tothill Street, London, S.W.1, not later than October 14.

THE DEPARTMENT OF OVERSEAS TRADE announces that Mr. L. A. Paish, the British Trade Commissioner in New Zealand, is now in this country on an official visit. Mr. Paish will be available at the offices of the Department of Overseas Trade during the period October 17 to 20 for the purpose of interviewing manufacturers and merchants interested in the export of United Kingdom goods to New Zealand. At a later date Mr. Paish will visit a number of industrial centres in the provinces. Firms desiring interviews with Mr. Paish in London or information regarding his arrangements to visit provincial centres should apply to the Comptroller-General, Department of Overseas Trade, 35 Old Queen Street, London, S.W.1, quoting the reference 13592/32.

THE ANNUAL DINNER of the Institution of Petroleum Technologists will be held at the Connaught Rooms, Great Queen Street, London, on Friday, October 7. Last year, it may be recollected, the theme of the several speeches was mainly in connection with the consuming side of the industry; this year it will be the equipment side. After the loyal toasts that of "Suppliers of Equipment to the Petroleum Industry" will be proposed by Professor J. S. S. Brane, a past-president of the Institution, and the reply will be by Mr. W. J. U. Woolcock, vice-president of the Federation of British Industries. Mr. J. B. Aug. Kessler will submit the toast of "The Institution," which will be acknowledged by the president—Mr. James Kewley—while Mr. T. D. Whurst will propose the toast of "The Guests." Mr. J. Davidson Pratt, general manager of the Association of British Chemical Manufacturers, replying.

A NEW SCHEDULE of export charges on goods for shipment from the Port of London Authority's docks and the Tilbury cargo jetty comes into operation to-day. In many instances rates have been reduced. All rates are now on a tonnage basis, the previous system of charging some descriptions of goods on measurement or package basis having been dispensed with. Variation of rates in respect of the same commodity in alternative forms of packing (*i.e.*, cases or drums) has been abolished as far as practicable. A feature of the new schedule is the provision for large consignments to receive substantial reduction on the standard tonnage rates. To facilitate handling on arrival at the docks consignors will in future be required to lodge separate shipping notes in respect of consignments to each port irrespective of whether or not two or more consignments are for conveyance by the same ship.

A MEETING OF THE BRITISH SECTION of the International Society of Leather Trades Chemists will be held at the Shoe and Leather Fair, Royal Agricultural Hall, Islington, on Thursday, October 6, at 10 a.m., when the following reports and papers will be presented: British Standards Institution, Mr. A. B. Craven; Arrangements for the Symposium on Protein Equilibria; Report of sub-committee on the detection of phenylene diamines in leather, Mr. J. A. Hill; Red Heat: Its Causes and Prevention, by Dr. M. E. Robertson; résumé of recent work of the British Boot, Shoe and Allied Trades Research Association, by Mr. H. Bradley; some notes on the Wear Resistance of Sole Leather, Dr. J. Gordon Parker; the Expansion and Contraction of Leather on Heating, Dr. C. H. Spiers.

THE SPIERS PETROLEUM CO., LTD., announces that Mr. Harold Gwynne Trew has been elected a director.

MR. D. OWEN EVANS, delegate director of the International Nickel Co. of Canada, Ltd., of which the Mond Nickel Co. is a subsidiary, was elected as Member of Parliament for Cardiganshire in the by-election there last week, in succession to Mr. R. Hopkin Morris, who has been appointed a London police court magistrate.

MR. F. B. RICHARDS has been appointed chairman of the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd. A committee of management has been appointed, consisting of Mr. Richards, Mr. G. J. Jackson (managing director), and Dr. E. W. Smith (technical director). Mr. F. B. Richards has also been elected chairman of Woodall-Duckham (1920), Ltd.

BETTER TIMES FOR THE COAL INDUSTRY were forecast by Sir John Cadman, chairman of the Anglo-Persian Oil Co., in a speech at the opening of new pithead baths at Norton Colliery, North Staffordshire, on September 24. "Although every industry has its troubles," he said, "the difficulties of coal are peculiar to the industry and are exceptionally severe. In the first place, our ability to produce greatly exceeds the present consuming power of our customers at home and abroad. Consequently, everything in the coal industry is organised on too large a scale. Facilities are duplicated, and, worst of all, the scramble for trade absorbs energies that ought to be applied more usefully and depresses prices to levels that bring little or no reward for the effort expended."

THE CHEMICAL ENGINEERING GROUP of the Society of Chemical Industry will hold its opening meeting of the session jointly with the London Section of the Society on Monday, October 3, at 8 p.m., on which occasion the Jubilee Memorial Lecture, by Dr. G. D. Bengough, on "The Corrosion of Metals in Salt Solutions and Seawater," will be delivered by the author. The meeting will be held in the rooms of the Chemical Society, Burlington House, W.1.—The first independent meeting of the group will be held on October 14, at 8 p.m., also at Burlington House, when Professor J. S. S. Brane (past-president of the Institution of Petroleum Technologists) will deliver a paper on "Colloidal or Coal-oil Fuel."

ON MONDAY NEXT the Publicity Club of London is to hear Sir Norman Angell on a proposal for advertising against war. It is felt that as the idea of permanent peace runs counter to the primitive passions of humanity the most powerful form of propaganda is required to establish it as a practical possibility. Some American advertising experts have therefore proposed a world-wide campaign in order to bring home to the mass of people the enormous waste and misery which modern war involves. Mr. Bruce Barton, the well-known publicist, has put forward a concrete scheme whereby the United States Government would reduce the cost of its army and navy by five per cent., and use this saving to finance full page advertisements in the leading newspapers and magazines both in America and Europe. This "peace appropriation" of £10,000,000 would involve regular space in the leading dailies of London, Manchester, Liverpool, Glasgow and Edinburgh. Mr. Barton describes the scheme as "a continuous all-the-year-round campaign as evidence of America's earnestness and willingness to back up her peace ambitions with self education and hard cash."

Obituary

DR. FREDERICK HENRY HATCH, past-president of the Institution of Mining and Metallurgy and a member of the Governing Body of the Imperial Institute, in London, on September 22 at the age of 68. Dr. Hatch was educated at University College, London, where he was a gold medallist and a Tufnell scholar, and at Bonn University, where he graduated Ph.D. During the war he rendered valuable service as a member of the Advisory Committee on Mineral Resources, Imperial Institute, and of the Home Ore Supply Committee of the Ministry of Munitions. After the Armistice he sat on Commissions to report on the iron ore fields of North-Western France, and on the iron and steel works in the occupied areas in Germany, in Belgium, and in France. He was a member of the Departmental Committee on the non-ferrous mining industry, and a director of the Mineral Resources Development Branch of the Board of Trade.

MR. JOHN GRAY, F.I.C., formerly vice-chairman of Lever Brothers, Ltd., Port Sunlight, on Sunday at Colwyn Bay at the age of 60. A native of Dalkeith, Mr. Gray was educated at Edinburgh High School, and became a chemist with Clipperton's Oil Co., Johnstone, and was later at their Mid Lothian works. He was appointed to the chemistry department of Lever Brothers in 1898, and four years later became general works manager. He was appointed a managing director in 1906 and in 1918 vice-chairman. In 1920 he relinquished that position to become managing director of the associated companies, William Gossage and Sons, Ltd., Widnes, and John Knight, Ltd., London. He retired in June, 1924, owing to health reasons. During his long association with the late Lord Leverhulme he played an important part in the development of Lever Brothers' works and in the social life of the Port Sunlight community.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

“L. & N.” COAL DISTILLATION, LTD., London, S.W. (M., 1/10/32.) Registered September 20, £60,000 2nd mortgage by way of further security, to L. N. and A. G. de Rothschild, New Court, St. Swithin’s Lane, E.C.; charged on certain letters patent. *£16,214. January 14, 1932.

County Court Judgment

[NOTE.—The publication of extracts from the “Registry of County Court Judgments” does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

COLES, SHERARD COWPER, and Coles, Constance H. Cowper (married) Rossall House, Sunbury-on-Thames, consulting engineer and metallurgist. (C.C., 1/10/32.) £11 18s. 6d. July 28.

London Gazette, &c.

Company Winding Up Voluntarily

ARTISTIC DYEING COMPANY (LUTON) LTD. (C.W.U.V. 1/10/32.) By reason of its liabilities, September 21. Mr. Philip Francis Keens, of 11 George Street West, Luton, appointed liquidator.

Company News

Boots Pure Drug Co., Ltd.—An interim dividend on the ordinary shares at the rate of 24 per cent. per annum, 6 per cent. actual, less tax, for the quarter, is announced, payable on October 1.

Burt, Boulton and Haywood, Ltd.—The directors recommend a final dividend of 4 per cent., less tax, on the ordinary shares, payable on or before October 7, making a total for the year ended June 30 last, of 8 per cent., less tax. A similar total was paid for the previous year.

Lafarge Aluminous Cement.—The accounts for the year ended March 31 last, show a profit of £6,704, which reduces the debit balance on the profit and loss account to £28,068. The annual meeting will be held on October 4, at 296-302 High Holborn, at 11 a.m.

J. Mandelberg & Co., Ltd.—The directors announce that in view of uncertain trading conditions, it has been decided to defer consideration of a dividend on the 8 per cent. preferred ordinary shares until the accounts for the complete financial year to December 19 next are available.

Thos. W. Ward.—Trading for the year ended June 30 last showed a profit, but the directors have again considered it wise to write down stocks considerably, and the result is, therefore, a net loss of £23,604, against £62,796 for the previous year. After transferring £10,000 from reserve, against £100,000, and bringing in £31,891, there remains a credit balance of £18,288 to carry forward.

Chemical Trade Inquiries

Abstracted from the “Board of Trade Journal.” Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

Holland.—A firm established at The Hague wishes to obtain the representation of United Kingdom manufacturers of industrial chemicals, etc. (Ref. No. 436.)

Norway.—A firm of agents at Oslo wishes to undertake the representation of United Kingdom manufacturers of drysalteries and chemicals, etc. (Ref. No. 438.)

United States.—An agent established in San Francisco and covering the Pacific Coast area of the United States desires to secure the exclusive representation of United Kingdom manufacturers of crude chemicals and pharmaceutical products, chemical and surgical glassware on a commission, purchasing or consignment basis. (Ref. No. 442.)

Forthcoming Events

Oct. 3.—Chemical Engineering Group. Joint meeting with the London Section of the Society of Chemical Industry. Jubilee Memorial Lecture, “The Corrosion of Metals in Salt Solutions and Sea-Water.” Dr. G. D. Bengough. 8 p.m. Burlington House, London.

Oct. 4.—Institute of Chemistry (Belfast Section). Public Lecture illustrated by a film. “Bakelite Synthetic Resin Materials—Their Applications in Industry and Methods of Use.” Austin Lowe. 8 p.m. Central Hall of the Municipal College of Technology, Belfast.

Oct. 5.—Institution of the Rubber Industry (West of England Section). “Some Employment and Welfare Problems.” Miss B. S. Thomas. Town Hall, Trowbridge.

Oct. 5.—Society of Dyers and Colourists (Midlands Section). “The Determination of Acid in Wool with Particular Reference to Dyed Goods.” S. R. Trotman and G. N. Lee. Nottingham.

Oct. 5.—Society of Public Analysts. Extraordinary General Meeting. 7.45 p.m. Joint Meeting of the Society and of the Food Group of the Society of Chemical Industry. “The Changes in Fruit on Storage.” 8 p.m. Burlington House, Piccadilly, London.

Oct. 5.—British Association of Chemists (Scottish Section). Informal Social. 8 p.m. Reid’s Tea Rooms, Gordon Street, Glasgow.

Oct. 5-15.—The International Exhibition of Inventions. Opening by Lord Mayor of London. October 5. 12.15 p.m. Central Hall, Westminster, London.

Oct. 6.—Sir John Cass Technical Institute. Inaugural Ceremony. Address by Viscount Burnham. 8.15 p.m. Jewry Street, Aldgate, London.

Oct. 6.—Institution of the Rubber Industry (Midland Section). “The Preparation of Rubber on Estates in Relation to the Requirements of the Rubber Manufacturer.” Lt.-Col. B. J. Eaton. Grand Hotel, Birmingham.

Oct. 6.—International Society of Leather Trades Chemists (British Section). 10 a.m. Shoe and Leather Fair, Royal Agricultural Hall, Islington, London.

Oct. 7.—Institution of Chemical Engineers. “Fluid Friction and its Relation to Heat Transfer.” Dr. C. M. White. 6 p.m. Burlington House, London.

Oct. 7.—Physical Society. “The Manufacture of Optical Glass.” Dr. J. W. French. 5 p.m. Imperial College of Science and Technology, South Kensington.

Oct. 7.—West Cumberland Society of Chemists and Engineers. “Low Total Carbon, Cast Iron and Phosphorus.” W. West. 7 p.m. Workington.

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